Vol. XVII, No. 17 Chicago, April 28, 1910 $3.00 Per Year

MOTOR AGE

Glidden Scouts Turn North in Texas

FORT WORTH, Tex., April 27—Special telegram—The Glidden trail for 1910 has been half finished, the Chalmers arriving here this afternoon after a short run of 30 miles from Dallas over the finest stretch of road so far encountered. Tomorrow Lewis and his comrades turn north on the second leg that will end in Chicago. So far as the log shows at present this will be either the seventh or eighth day of the tour proper. The first day will be either to Lexington or Louisville; then come Nashville, Tenn., and Sheffield, Ala., and Sunday in Memphis. Little Rock, Texarkana and Dallas are probable night stops following Memphis. The total mileage to date is 1,283.

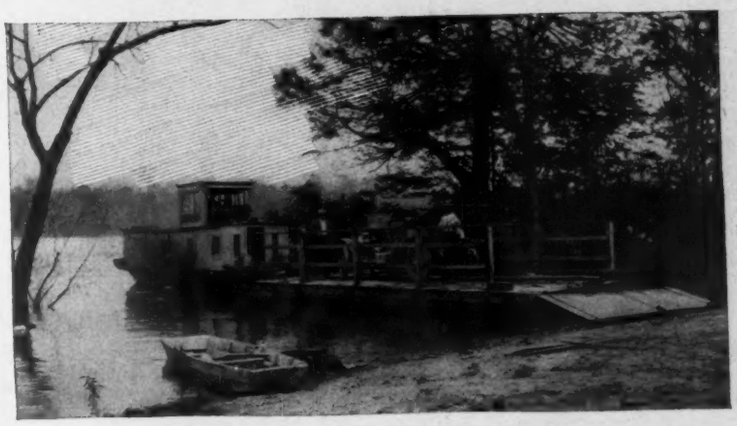
The Dallas Dealers' Club extracted a promise from Dai Lewis that if they could pilot the Chalmers across Texas in 2 days he would consent to lay over.

Scouts Run Into Dallas

Dallas, Tex., April 26—Special telegram—The Glidden tourists will wind up the first leg of the Cincinnati-Dallas-Chicago run with a rush. The pathfinder reached here this afternoon after a 215-mile run from Texarkana which is only equaled by the first day's trip from Cincinnati to Louisville. The road was flint-like gumbo clay, hard as a bone and a pike so smooth that 40 miles an hour produced never a tremor.

Dai Lewis derived much benefit from the guiding of M. A. Sackstedder, president of the Dallas Dealers' Club, who also supplied data compiled by the club. The pathfinder left Texarkana late Monday afternoon and made Paris, 97 miles, from which place a start was made early this morning for the 117-mile spin into Dallas. One hundred flag-bedecked cars met Lewis and his comrades 6 miles from the city and formed a parade.

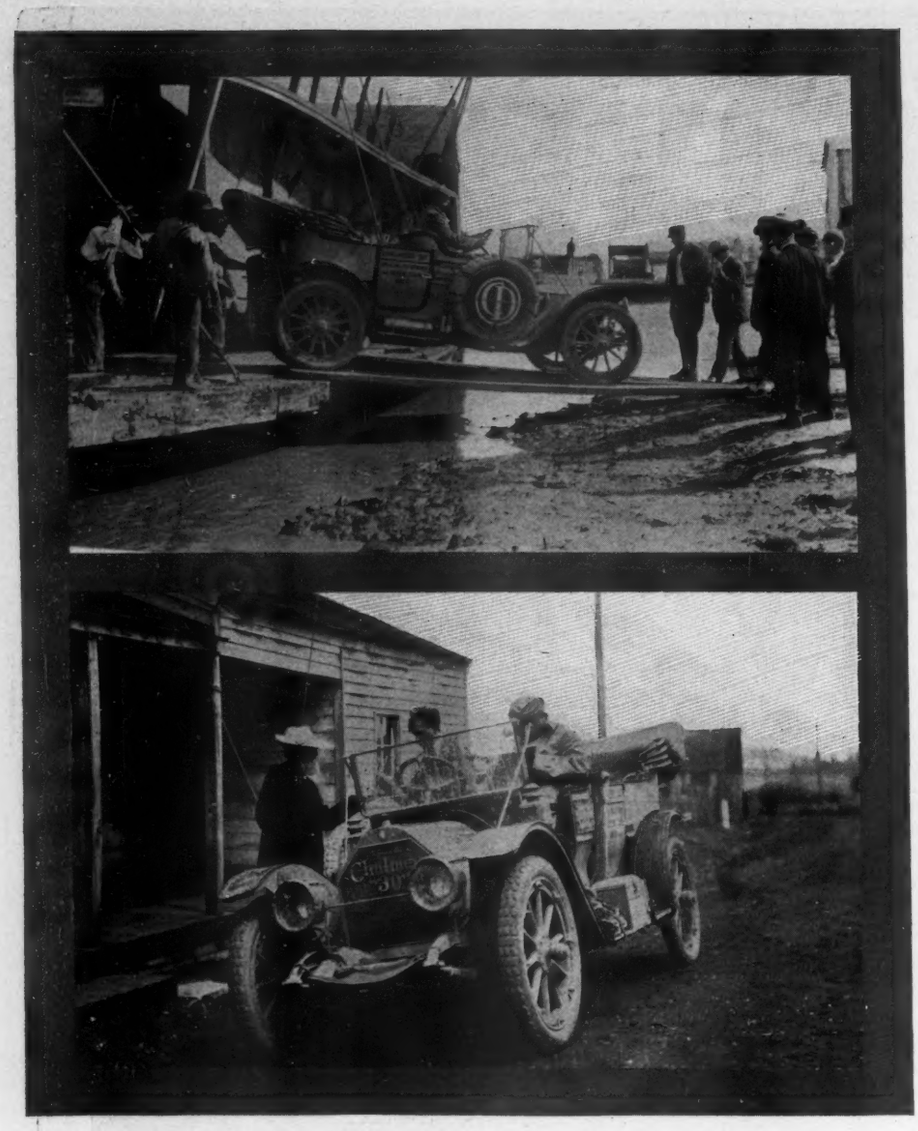
The road over this Texarkana-Dallas stretch is mostly clay with hard gumbo for variety. It is table land and so fast that as one thrifty village is passed the next springs into view on the distant horizon. Paris, a city of 21,000 inhabitants, is the most important town on the day's route. Cotton and its by-products are the chief commercial interests. There are fifty cars in the place. Bonham, Clarksville and



Crossing Buffalo Creek Out of Summertown

Even the Bear is Glad to See the Pathfinders

Water Too Deep, So Towing is Resorted To



PATHFINDER COMES OFF THE BOAT AT REO, ARK.
OLD SOLDIER GUARDS TOLL GATE IN ARKANSAS

Honey Grove, boom towns whose population can only be guessed at, are the largest of a long series through which the Gliddenites will pass. There are 1,100 cars owned here and dealers are waxing rich. Tomorrow afternoon the pathfinder proceeds to Fort Worth, where a night stop will be made.

Trail Pierces the West

Texarkana, Ark., April 25—The south is behind—the west beckons as the Glidden pathfinder nears the home stretch. The last day's run in what might be termed the border state is from Little Rock to Texarkana and the last half, from Arkadelphia to this city, was mapped yesterday by Lewis. The distance is 191 miles and probably will supply the stiffest going of the entire route. The spring mud is at its worst now and all streams are high, giving the pathfinding car a heavy task to perform, but the assurance has been given all along the line that improvement work will begin at once and, as the season progresses, the roads will undoubtedly be in at least fair condition. Lewis is convinced that there will be not greater than 10 per cent penalizing for loss of time.

"The roads over the first 1,000 miles of this year's tour will fully equal those of last year in every section and be far superior in many," said the scout yesterday. "The country passed through will be more interesting from the pleasure tourist's viewpoint and from the manufacturer's than any 1,000 miles ever traversed in an association contest."

Arkansas has an industrial boom, evidences of which thrust themselves upon the tourists' attention everywhere. Every hamlet has its organization of business men, all eager to bring about better things and wonderful stories are told of soaring land values and influx of inhabitants. After Hot Springs is passed, the motor car becames a rarity until the Texas line is reached and yet wealth is being piled up in lumber and cotton over every mile of the way. The demonstration which the tour will make of the motor car's possibilities on rural roads and energetic highway improvement propaganda should open a splendid field to dealers.

Arkadelphia, the probable noon control selected by E. L. Ferguson, has 5,500 population and every appearance of prosperity, yet there are but five motor cars in the town. There are two denominational colleges there and it is the seat of Clark county. Prescott, also on the route, is the seat of Nevada county and of its 3,500 residents, many of whom live in homes that would rank with the best in the suburbs of Chicago and New York, not a one possesses a motor car.

When the pathfinders entered the city of Hope they were greeted by a tall signboard proclaiming that the Progressive League has $80,000 in hard cash for factory bonuses, chair, woodworking furniture and cotton plants being especially desired. Discounting the roseate census estimates of its leading citizens, it would appear that Hope has a population of 5,400. It is a typical Arkansas city, in the heart of the cotton and lumber country, where everybody seems to be making money. There are four motor cars in Hope.

Texarkana, which is bisected by the Texas-Arkansas line, claims between 25,000

MOTORISTS OF CLERENDON, ARK., GREET GLIDDEN SCOUTS

and 40,000 population, according to the informant's degree of enthusiasm. It has paved streets, splendid public buildings and looks affluent in every particular, yet there are but twenty cars owned in the city.

The atmosphere of Texas is permeated with motoring. Last night in the Red river bottom land, just as night descended into the jungle, the pathfinders were greeted by four other cars from Texarkana, Dallas and Fort Worth, the last-named delegation having come 265 miles to extend the glad hand. The Star-Telegram and the Record, of Fort Worth, sent special cars with correspondents, all decked out with streamers heralding the Glidden tour pathfinders. M. A. Sackstedder, president of the Dallas Dealers' Club, headed the party from that place.

In attempting to buck across a creek near here two of the welcoming party's cars were disabled, and, in view of the distance they had traveled and their intense interest in the game, Lewis consented to delay the start today until noon, so they could repair and be in line.

Good Going to Little Rock

Little Rock, Ark., April 23—The last half of the run from Memphis to this city was mapped out yesterday by Dai Lewis over roads most of which are unexcelled in any Glidden tour. The crossing of the Mississippi and White rivers, where there would be danger of losing time ordinarily, has already been arranged for and there will be such ferry accommodations that an hour and a half at the outside will suffice to get all the contestants over both streams.

The Chalmers 30 had to make a 10-mile detour in getting over White river because of the high water at this season. Guiding parties from Helena, Marvel, Blackton, Clarendon, Stuttgart and Little Rock conducted the road-hunters over the entire trip by relays. At Clarendon the White river was crossed. The course bent after this to take in Stuttgart, a city of 3,000, settled by German farmers and resembling a far western city more than a southern town. Sixty motor cars are owned here and agents have more advance orders than they can handle. Stuttgart is on Grand Prairie, a plateau of magnificent alluvial land west of the White river. Rice is the chief product and the largest rice mill in the world is at Stuttgart.

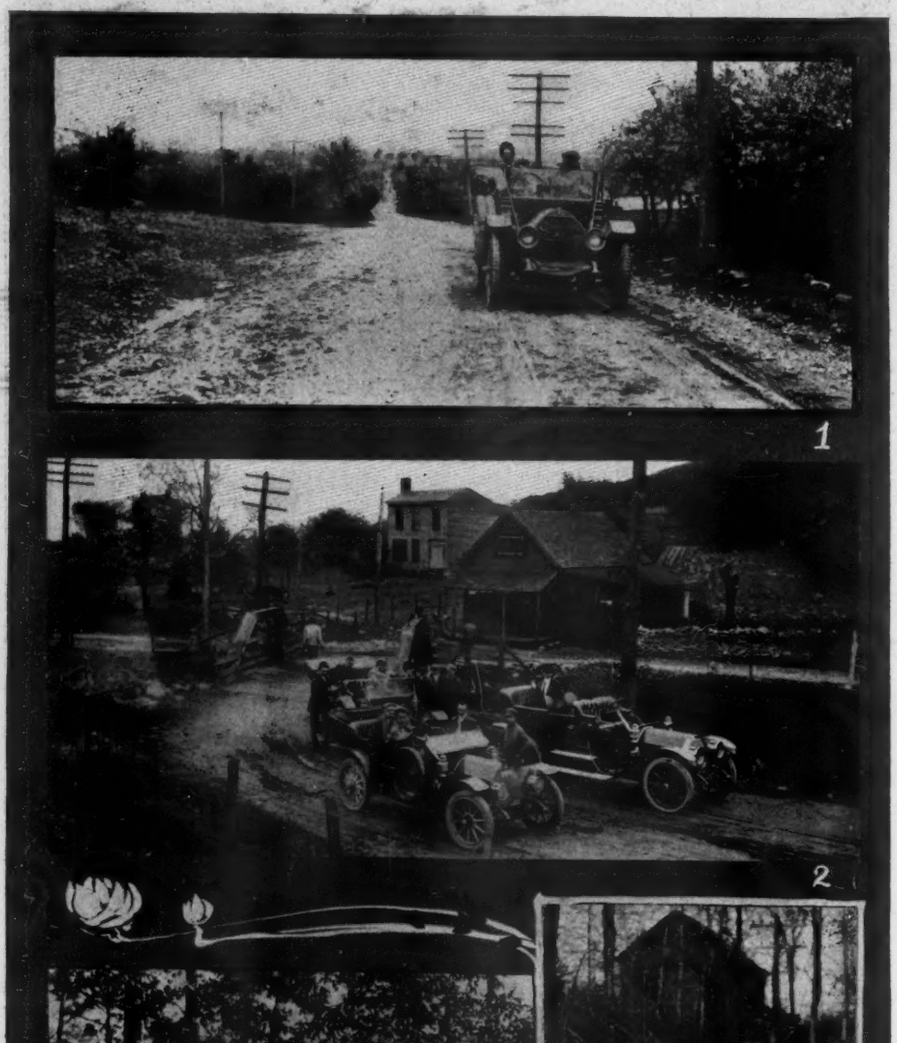
TRAIL NEAR INKA PRESENTS A PASTORAL SCENE
SCOUTS ON STATE LINE BETWEEN KENTUCKY AND TENNESSEE

PATHFINDING CHALMERS AND ESCORT AT HELENA, ARK.

The roads are at present almost perfect, being the typical winding prairie highways on which the only speel limit is the car's power. The last 14 miles into Little Rock is over macadam pike, the like of which has not been seen since the pikes of Kentucky were left behind. The night entry into Little Rock spoiled the reception planned by the local club, whose enthusiasm resembled that which has been general during the past three or four days and which is centered chiefly in good roads. A delegation from Hot Springs brought the best information and blueprint maps to Dai Lewis immediately upon his arrival.

Little Rock has 65,000 inhabitants and in almost every block there are building operations under way. Very recently the coal resources of Arkansas have been made available for its own capital and a manufacturing boom is expected. Here, as in

Scenic Beauties of Southern Route



1—On Columbia Pike, Going to Springfield
2—Nashville Escort Meets Pathfinders
3—Almost a Bath for Dai Lewis
4—Clearing the Road Near Essery Springs

the rest of the state, one remarks the initiative and hustle that has come to the associated with the new west.

Didn't Know Uno

Gardham still is chuckling over a joke on Dai Lewis. A suburb of Bear Wallow on the Louisville and Nashville pike is named Uno. The total population of the two towns is eight. Lewis got so that he could detect one of these Kentucky hamlets as the Chalmers bearing the scouring party whirled past. Once in a while he saw two or three men together in front of a corn crib and mistook the combination for a pike village, but that was seldom. So when the car reach Uno Lewis ordered Gardham to stop.

"What's the name of this place?" he inquired in his best road-side manner, cultivated on many such tours.

"Uno, sah," said the lean, dark-eyed native to whom he addressed the question.

"I'm sorry," said Lewis, "I have heard of your place but the name has slipped me. I really don't know. What did you say it was?"

"Uno."

"No, my friend, I don't know. We're in a hurry. What is this town?"

"I tol' youah all oncet an' I told youah all agin, Uno."

"I beg your pardon, if you did tell me I didn't understand. Please repeat."

"Uno."

"No, by the great irreducible logarithm I don't know and we've got to be going. Skating skallawags, won't you answer a civil question? Quick, now, don't monkey any longer."

The Kentuckian's eyes lit up with a peculiar glint that made the others in the car shiver, but Lewis' good nature was melting into white-hot rage when someone glimpsed a faded sign over the single store in Uno, and a big cigar with a red and gold band mollified the misjudged native.

Scouts in Arkansas

Helena, Ark., April 21—The tawny Mississippi was crossed this afternoon by the 1910 pathfinder and the exploring party found itself at the fountainhead of Arkansas hospitality, which had sent a vanguard to Memphis with the glad hand and blueprint maps to make auspicious the routing of what will be the first day's run of the second week of the contest. The 62-mile course from Memphis to Trotter's Landing, where the cars will embark for the western bank of the river, is through delta land devoted to the raising of cotton and pickaninnies. There are ten negroes to every caucasian in this region and the whitewashed cabins with their swarms of youngsters and turbaned women will give the tourists a most striking picture of black-belt life.

Glidden 1910 Tour Pathfinding Trip

The task of mapping the route between Memphis and Helena was greatly facilitated by the delegation from the Helena Business Men's League, which had selected the most favorable roads in advance and which accompanied the car. Convoys are assured from this point practically on the way to Chicago, in fact. The Memphis-Helena road is dirt and gravel for about a third its distance, then the light clay of the levees, known colloquially as buckshot, is encountered. The tour already has inspired work with a split-log drag which will put the highways in racing shape.

At a dinner tendered Dai Lewis and his companions by the Business Men's League and the recently formed motor club—another fruit of tour enthusiasm—the usual form of entertainment was augmented by some glad news. E. C. Horner, president of the league, presided at the dinner, and good roads and motoring were the dominant topics of conversation. Judge Greenfield Quarles, of the Phillips county court, who is the ruling power in road construction, has become greatly interested in the tour and will bend every effort to make motoring possible throughout this part of the state. He attended the dinner and gleaned much special information from Scout Lewis.

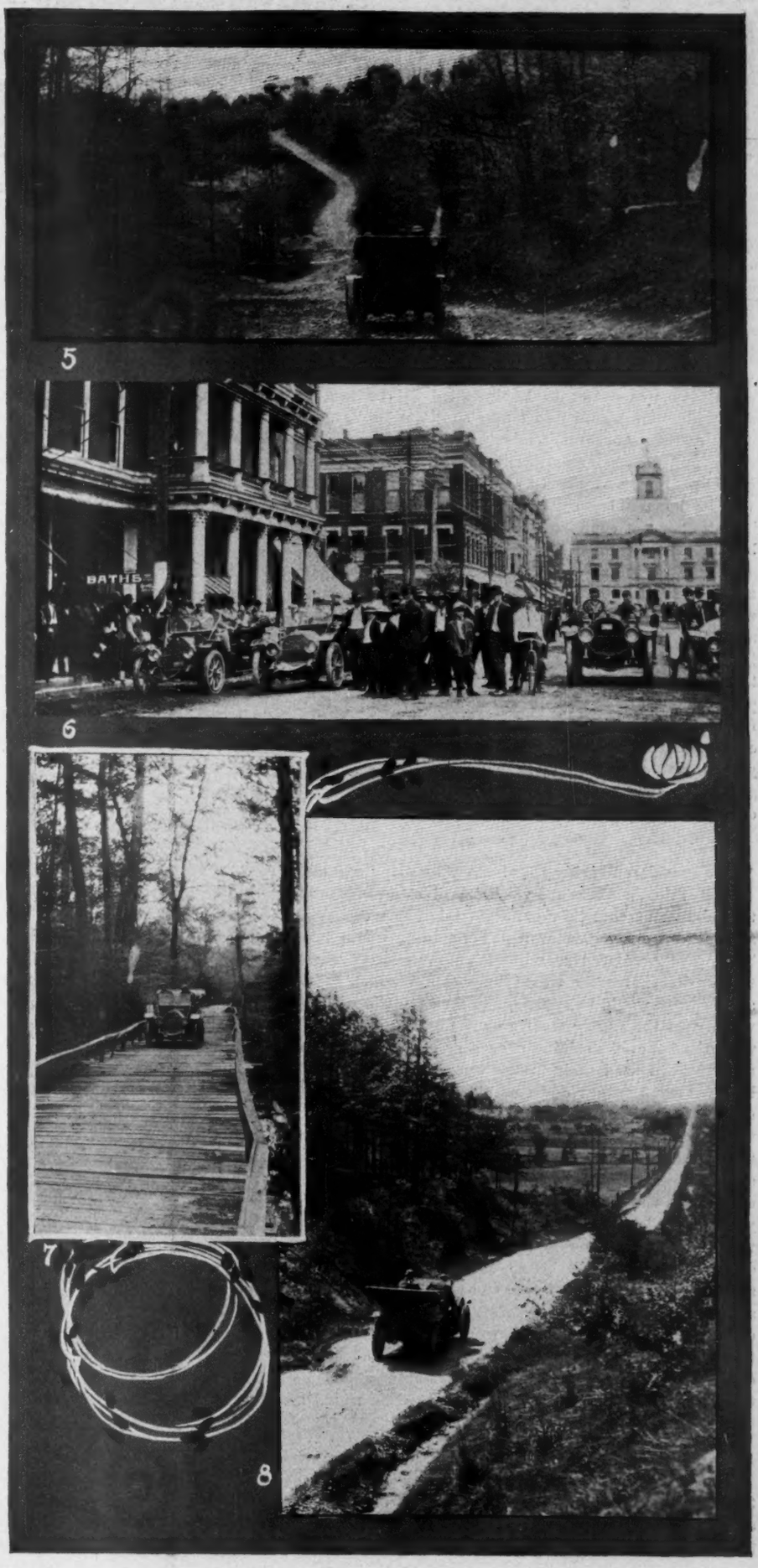
Memphis Talks Good Roads

At the Business Men's Club of Memphis a good roads meeting was held Wednesday night under the direction of the Memphis Automobile Club, the president of which is N. C. Perkins. E. L. Ferguson, of the A. A. A., and Dai Lewis were called upon to give the local men pointers and committees were appointed to look after legislation and immediate construction work. Here it was again demonstrated that the pathfinding trip is a marvelously successful missionary tour in respect to highway improvement.

Memphis, confident of 200,000 in the next census returns, has about 100 motor cars and interest in the machine and its possibilities is just developing, as in all of the large southern cities. In this part of the country the growth of the motor car's popularity is in direct ratio to the spread of scientific road improvement.

The dry weather of the past few days promises fair running for the road hunters all the way to Dallas, at least, with bright hopes of decent roads on the northern stretch. The trip to Helena was a welcome change from wallowing in the flooded creeks of Tennessee and the juicy mud of the Mississippi bottom lands.

Helena has 15,000 inhabitants and within the past few years has arisen from a mere river port to a live city, possessing all the energetic progressiveness of the new south and west combined. There are half a hundred motor cars owned here now and additions to that number are made every week.



5—Road to Green Hill, Sheffield, Ala.
6—Glad Hand at Columbia, Tenn.
7—Bridge Through Swamp in Mississippi
8—Going Into Collyville, Tenn.

Published Weekly
The CLASS JOURNAL COMPANY
1200 Michigan Avenue
CHICAGO
New York Office, 239 West 39th Street

MOTOR AGE

Subscription Rates
United States and Mexico, per year, $3.00
Other countries including Canada, $5.00

Entered as Second-Class Matter September 19, 1899 at the Postoffice at Chicago, Illinois, under Act of March 3, 1879

Car Output Restricted

SIX months ago everyone was optimistic on what would be the possible output of cars for 1910, many going so high as to estimate that 300,000 cars would be manufactured during the year. Every month of the past fall brought out some announcement of a new concern entering the field, which was prepared to build from 3,000 to 5,000 cars and in nearly every case came the assurance that the parts for these were purchased, that the machinery was ready to be installed in the factory, and that surely the cars would be made. Time has proven otherwise, and many of those concerns, which were assured months ago of parts, today find themselves without such, and their output has been held up from a month to 6 weeks, and in not a few cases it will be impossible to secure the parts at all. But the shortage in output is not confined solely to those who have been extensive buyers of ready-made parts, rather many concerns which build nearly all of their own parts have acknowledged within the last month that their output will not be within 800 or 1,000 cars of what they had planned. This shortage is due directly to their not being able to manufacture the parts, and assemble the cars. It is one thing when a manufacturer is in an optimistic mood to announce a 7,000 output as compared with 1,500 cars the preceding year, but it is quite another thing to perfect the factory organization and actually get the cars out. Many new companies that made wild-cat promises of 5,000 cars have not as yet reached the 1,000 mark, due directly to not being able to get dies, machinery, material, factory organization, help, or many of the other things that go to make up manufacture.

IT is considered highly satisfactory by many manufacturers that the various makers are not being able to produce anything like the number of cars they expected to. If an estimate were made as to the shortage Motor Age believes it would be fully 80,000 below the predicted marks. Eighty thousand cars thrown on the market naturally would have a big effect on the situation and perhaps would be sufficient to turn the tide, so that the public would feel the supply was in excess of the demand. It has been with the hope of avoiding such a condition of affairs that many makers have used their utmost energies during the past year to hold the 1910 output down as much as possible. So great is the demand at the present time that it is practically an assured fact that at no time during the present year the supply will even equal the demand. Not a few makers have refrained from booking orders for a month or more, and from certain makers of small cars comes the announcement that they could sell 5,000 more this year than they will be able to manufacture. So long as conditions of this nature rule the industry will be in a healthy condition, and there will be no danger of a slump in the market such as many have predicted. It must be acknowledged that the supply of parts, the supply of factory machinery, and principles of organization have been the real safety valves of the industry this year, and that the complete situation is better today because of this shortage than if every manufacturer had been able to turn out the number of cars he announced he would last autumn.

UNDOUBTEDLY the severe frosts which have visited many of the middle and western sections of the country during the past week and have completely ruined the fruit crop in places and worked injury on the grain, will have their direct results on the motor industry as a whole.

The Rubber Situation

IF THE price of rubber, which is now hovering around the $3 mark, continues to increase it is questionable if Akron will not become as important a motor car center as Detroit. In the last 20 years crude rubber has increased in price from 60 cents a pound to $3.06 at which it was listed recently. This phenomenal price for para gum has been due to the unprecedented demand for this grade of rubber gum which is so extensively used in pneumatic tires. It has been this increased consumption of gum that called for increases in tire prices during the last 18 months, and if the 1910 output of cars were to be as great as predicted it is certain that the price of rubber would be higher than it is today. As it is not a few are wondering what is going to be the condition a year hence. The purport of this query assumes form when it is remembered that several makers are preparing to almost double their output for next season. Double output means double tire output, and unless the crop of gum from Brazil greatly increases the demand will be in excess of the supply, and higher prices will result.

THE rubber situation is a critical one, due to the fact that rubber plantations have not become that factor in the industry which they might have attained. It is questionable today if 1 per cent of the rubber gum consumed comes from plantations. In 5 years hence the amount of gum coming from plantations will have vastly increased, and amelioration of the rubber situation may be expected from such conditions. There have been many stout devotees of developing rubber plantations, but to date the real profit behind such ventures has not been recognized by many who are interested in such projects. The rubber plantation interest centers chiefly in the East Indies and the values attaching to stock in such have been well demonstrated in the recent London rubber mania, when stocks have been sold for three times their original value, and where over 200 companies have been promoted since the first of the year. This wild-cat stock manipulation does not, however, have any bearing on the present rubber situation, nor does it make trees grow any faster in the East Indies. It does, however, show the value great masses of the people place in plantation work, and this is bound to have its effect on this industry.

THE part that rubber is to play in the manufacture of cars has recently been evidenced by the activity which certain concerns have displayed in securing control of tire companies. During the past fall many of the big manufacturers have wherever possible been getting interests in concerns manufacturing car parts and materials, their object being to insure a supply of parts so that their factory output would not be held up. This spirit of self-protection has invaded the rubber market and already some concerns have protected their 1911 and 1912 trade in this respect, and those who have not been sufficiently fortunate in getting direct control have already made arrangements for tires for the coming season. The fluctuations of the rubber market will be watched with particular interest during the coming months, and any increase in the price of the crude gum will be certain to make itself felt in the price of the rubber product. One result of this increase in price will be putting tires on cars that are under size, a trouble which dealers have had to contend with during the past two seasons. It is a certainty that as the prices increase smaller sized tires will be put on in many cases.

VELIE SUIT STIRS TRADESMEN IN DETROIT

DETROIT, Mich., April 25—Manufacturing circles in Detroit are busily discussing the more recent phases of the litigation brought by the A. L. A. M. against independent manufacturers and the counter-suit in which the Velie Motor Vehicle Co. complains that the licensed association's measures constitute an infraction of the Sherman law. In fact, the discussion locally is one of the most far-reaching and is by no means limited to the manufacturers, being a common topic of conversation among the thousands of workmen in the various licensed and independent factories, as well as the owners and prospective purchasers of cars.

Both sides of the controversy have gone freely into print in the local papers, the most noteworthy event being the publication of a full-page advertisement by the Abbott Motor Car Co. This company shows its confidence in the anti-Selden situation by guaranteeing to protect all buyers of Abbott cars against Selden interference, the Abbott company having arranged with a New York surety company for bonds protecting each individual buyer. This action is one that is certain to impress on prospective buyers the confidence of the firm in its manufacturing privileges.

The papers of Tuesday carried generally a piece of licensed association publicity in which the fact was emphasized that buyers of licensed cars needed no bond to guarantee the legality of the product. The publicity included a facsimile of the license plate and the statement that "The Selden patent has been declared by the United States district court to be valid and to cover the modern gasoline motor car."

The Milwaukee suit, in which it is alleged that the A. L. A. M. policy constitutes a conspiracy in restraint of trade, met an enthusiastic welcome from the local independents. However, Charles F. Burton, of the firm of Parker & Burton, patent attorneys, who have been prominent participants in the Selden litigation up to date, is of the opinion that the litigation of the Velie company is unlikely to succeed. He is frank in the statement however, that there is a way in which the independent manufacturers may hope for redress, adding that, when that measure is called into play, it will come as a complete surprise.

Homer Warren, president of the Warren Motor Car Co., one of the prominent independents, believes that suits similar to that brought by the Velie company will be useful as a means of putting the independents on record and will enable them, in case the Selden patent is declared invalid, to enter strong claims for damages incurred as defendants in a suit in which their business has been appreciably diminished as the result of the claims made by the licensed association.

Late Action of Moline Concern Brought Against A. L. A. M. Members Provokes Comment

Attorney James Whittemore, who has charge of the litigation of the licensed association in the local courts, talked freely on the Velie's suit. The fact that the litigation was begun in a Milwaukee court, he said, based on a peculiar condition, this court having been the only one in the country in which it has been held that limitation of prices, sales and output, under a patent, can be considered violations of the Sherman act. Elsewhere, wherever this principle has been tested in court, he says, it has invariably established the stand of the holders of the patents in question.

"It is this principle," says Mr. Whittemore, "that enabled the Bell Telephone Co. to so thoroughly maintain a monopoly and to allot its territory in an arbitrary manner, and there are records of many suits in this connection, in which an invariable result of favorable verdicts has been obtained. The Victor Phonograph Co. recently succeeded in stopping a cut-rate sale of its product by a Chicago department store, by the application of the principle that the holder of the patent is the absolute dictator of all manufacture and sales conditions concerning its device."

According to Mr. Whittemore, the one case on which the Velie company has based its claim was the suit of the Rubber Tire Wheel Co. vs. the Milwaukee Rubber Co. The plaintiff in this case sued for royalties and the defendant set forth that the arrangement in force was a violation of the Sherman law. This stand was successful, though the decision was reversed by the United States court of appeals, Judges Sanborn, Grosscup, Baker and Kohlsaat agreeing in the process.

Coming Motor Events

April 30-May 2—Reliability run to Atlantic City, Quaker City Motor Club, of Philadelphia.
May 5—Economy run of Chicago Motor Club to Lake Geneva and return.
May 5-6-7—Speedway races at Atlanta, Ga.
May 9—Road race at Santa Rosa, Cal.
May 9-10-11—Reliability run of Motor Club of Harrisburg, Pa.
May 13-14—Track meet of Motor Contest Association, Brighton Beach, New York.
May 15—Track meet of Santa Rosa Automobile Association, Santa Rosa, Cal.
May 18-19—Reliability run of Norristown Automobile Club, Norristown, Pa.
May 19-20-21—Reliability run of Automobile Club of Hartford, Hartford, Conn.
May 22—Reliability run, Fort Worth Star-Telegram, Fort Worth, Tex.
May 29—Spanish voiturette road race for Catalunya cup.
May 27-28-30—Speedway meet at Indianapolis.
May 30—Track meet of Bay State Automobile Association, Boston.
May 28-30—Track meet of Automobile Club of Kansas City, Kansas City, Mo.
May 30—Hill-climb of Automobile Club of Bridgeport, Bridgeport, Conn.
May 30—Decoration day road race of Denver Motor Club, Denver, Colo.
May 29-30-31—Speedway meet at Los Angeles, Cal.
May 27-31—Reliability run of Washington Post, Washington, D. C.
June 1—Road races of Motor Contest Association, Riverside, L. I.
June 4—Track meet of Quaker City Motor Club, Philadelphia.
June 4—Annual hill-climb of Worcester Automobile Club, Worcester, Mass.
June 11—Annual Giant's Despair hill-climb, Wilkes-Barre, Pa.
June 11—Road races of Portland Automobile Club, Portland, Ore.

LICENSED DEALERS ORGANIZE

Baltimore, Md., April 24—The licensed motor car dealers of this city met at the Hotel Belvidere and organized the Licensed Automobile Dealers' Association of Baltimore. Dr. H. M. Rowe presided and Arthur Stanley Zell was secretary. One of the principal reasons for the organization, according to the members, is for the holding of local shows in the future for licensed cars instead of by the club as formerly. Other reasons outlined by Dr. Rowe are to encourage advertising of all kinds in local and weekly papers, encourage the promotion of properly conducted race meets, touring contests, etc.

PARRY COMPANY SUED

New York, April 23—Announcement is made at the A. L. A. M. headquarters that in addition to the ten suits filed in the Michigan courts against manufacturers not making cars under the Selden patent, that still another suit has been brought. The latest one is against the Parry Automobile Co. of Indianapolis, the suit having been filed in the federal court, district of Indiana. In all the suits the Columbia Motor Car Co. and George B. Selden are the complainants. Judge Hough last Friday ruled in favor of a motion to file a bill substituting the Columbia Motor Car Co., as plaintiff in place of the Electric Vehicle Co.

QUAKER ROADABILITY BIG ONE

Philadelphia, Pa., April 25—The third annual roadability run of the Quaker City Motor Club starts Saturday morning from the rooms of the club at the Hotel Walton and traverses the state of New Jersey to Atlantic City. Indications point to many more than 100 entries. The course is about 68.2 miles long. The unique feature of the run is the secret time arrangement by which the prize awards will be made. A plan has been followed in this particular that is different from any of the usual ideas of a secret time and all that has been announced is that Mayors Reyburn and Stoy have agreed on a time within the New Jersey speed laws and the cars that most closely approximate their figure will win.

RAPID TRUCK USED BY CHICAGO MOTOR CLUB IN SIGNBOARD WORK

Chicago Marks Its Big Motor Routes

CHICAGO, April 25—Saturday marked the completion of the first step of the Chicago Motor Club's signboard campaign when the last of the four routes selected for tagging by the local organization, the one to South Bend and return, was finished. This work has been delayed by the severe winter, but last week the weather was such that Chairman Lawrence of the signboard commission was enabled to tackle the last stretch. He was aided in this work by a 2-ton Rapid truck, the services of which were donated by Siegmund-Baylies company of Chicago, agent for the car, which has agreed to help the local motorists in carrying on this good work. The truck has been on the road for a week now and the latter part of the week it encountered the snowstorm which was most severe, but despite this handicap it daily carried a heavy load of signs and posts and finished the task on schedule time. The Chicago Motor Club now has spent more than $2,000 in erecting signs on the roads leading into Chicago. It has put up seventy-eight signs on the Lake Geneva route, sixty-nine on the one to South Bend, 110 going to Beloit, and eighty-three on the Milwaukee stretch. Now there are signs on 369 miles of roads in this vicinity, and the club has marked the four main arteries of motor traffic running into the city of Chicago.

ECONOMY RUN POSTPONED

Chicago, April 25—Postponement of the annual economy run of the Chicago Motor Club until Thursday, May 5, is announced. The affair was originally scheduled for Thursday but with the roads in their present condition the contest would savor more of the character of a tough reliability run rather than a fuel test. The entry list has been reopened and additional candidates can file their nominations up to Saturday night, when the books will close. The field already gathered together is a thoroughly reperesentative one, there having been filed thirteen entries up to last Saturday night, which included the following: Moon, Oakland, Falcar, Hudson, Hupmobile, Overland, Franklin six, Cole, Fiat, Welch, Grout, Henry, DeTamble.

OLDFIELD RACES IN 'FRISCO

San Francisco, Cal., April 25—Special telegram—Barney Oldfield captured the honors at the 2-day race meet held at Ingleside track Saturday and Sunday, by establishing a coast mile record for a circular dirt track. In his big Benz Oldfield on Sunday from a flying start covered the distance in :51.56, beating the new record he made on the preceding day by :00.56. A Maxwell car captured the 5 and 10-mile handicap events Sunday after the Darracq went through the fence in the latter event. Oldfield in a Knox stopped to see if Kerscher was injured. Oldfield won the 10-mile handicap on Saturday in the Knox.

KANSAS CITY CLIMB POSTPONED

Kansas City, Mo., April 24—The hill-climb of the Automobile Club of Kansas City that was set for April 30 has been postponed for 2 weeks on account of the condition of the roads around Kansas City. The new date is May 4.

The first call for the Kansas City Star trophies tour of 1910 has been sung by the Automobile Club of Kansas City. W. G. Coumbe, chairman of the runs and tours committee of the club, has set May 21 as the date when the pathfinder, pilot and official cars will be chosen. This will be the third and longest Star tour. The route will lay across Kansas and Colorado down into New Mexico to Santa Fe, following the old Santa Fe trail from terminus to terminus. The return to Kansas City will be via Pueblo, Colorado Springs, Denver, and over the north Kansas route to Kansas City. The mileage will be close to 2,000 and it is figured that 12 days will be needed for the tour. The pathfinding party will go out over the route about June 10. Last year there were fifty-nine entries in the tour.

A sort of fox-and-hound chase will be the sociability tour of the Automobile Club of Kansas City Sunday, May 1. The members have been advised to leave the club's Rest Home near Hickman's Mills, about 20 miles from town, about 2 o'clock in the afternoon and follow a confetti-strewn path. Just where the pathfinder is to take the tourists is a question, but it is promised that there will be enjoyable surprises both in the way of a stopping place, luncheon, and divertisements.

REVISE FRENCH MOTOR TAX

Paris, April 11—In their revision of the law governing motor taxation, the French parliament proposed to levy a tax on owners of cars coming into the country merely for the purpose of touring. Under the original proposal 1 month's grace was allowed, motorists staying longer than this to pay at practically the same rate as those domiciled in the country. After revision by the senate the law has been passed according 4 months' grace. If this time is exceeded the owners must pay a fixed tax at the rate of $18 for a period of 360 days, and in addition a horsepower tax, varying from $1 for each horsepower from the first to the twelfth, and gradually increasing until each horsepower above the sixty-first is taxed $3. The tax is levied for periods of 1 month, every fraction of a month being counted as a full month.

NO RACING FOR BOSTON

Boston, Mass., April 23—It is doubtful if there will be any motor races in Boston this summer. Some time ago it seemed as if something would be done under the auspices of the Bay State A. A., but the date first proposed, May 30, was considered out of the question, and so June 17 was talked of. As the Bay State A. A.

PLACING SIGN AT HAMMOND, IND.

is now being conducted without officers, the affairs being in the hands of committees, it is likely racing will not be undertaken. However, there is talk now of a tour for New England motorists. Some of the local men feel the east has been somewhat neglected the past 2 years and that something should be done. So some of the men are talking the matter over with an idea of having a tour start from Boston and go to the Berkshires, then up through Vermont to Montreal, down over the old Glidden route to Quebec and through Maine to the White mountains ending at Boston again.

VIRGINIA CONTEST ANNOUNCED

Richmond, Va., April 25—Perhaps the matter of greatest interest in motor circles just now is the Times-Dispatch endurance contest which is scheduled for May 5, 6 and 7, being Thursday, Friday and Saturday of the week, and which is known as the Virginia contest. It will be a class A affair and will be handled by Otis M. Alfried, secretary of the Virginia chapter, and Dr. H. W. Bassett, who have been appointed by the A. A. A. to carry out the rules and regulations of the contest. The route will be from Richmond to the Yellow Tavern, to Ashland, to Hanover Courthouse, crossing Page's bridge; up to Bowling Green and from there to Fredericksburg; from Fredericksburg to Washington, Occoquan and Alexandria. The first night will be spent in the national capital. On Friday morning the cars will leave for Charlottesville by Georgetown; thence to Gordonsville.

TWELVE IN A TWENTY-FOUR

New York, April 25—Extensive preparations, involving many improvements to the Brighton Beach race track are being pushed along to make the course ready for the first 24-hour race of the year which is scheduled to take place May 13-14. The entry list has filled and the field will consist of twelve contestants. These are: Two Buicks, two Stearns, two Rainiers, a Simplex, Haupt, Selden, Marion, Fiat and Renault.

DIGGING HOLE FOR SIGN POST

CHICAGO MOTOR CLUB'S SIGNBOARD CREW AT WORK

Germany Enters the Gold Cup Race

NEW YORK, April 24—The Kaiserlicher Automobile Club of Berlin has cabled the entries of three Benz cars for the American grand prix road race which will be run on the Long Island motor parkway on October 15 under the auspices of the Automobile Club of America. This announcement was made today by William K. Vanderbilt, Jr. They are the first official entries received and the receipt of these nominations is most encouraging to promoters who had stipulated that if they did not have fifteen entries in hand by August 15 they could call the race off if they so desired. With Benz in it is expected that the German's greatest rival, the Fiat, will be heard from in the near future.

ACTIVITY IN CLEVELAND

Cleveland, O., April 23—A sign day is a unique feature which will be put into effect shortly by the Cleveland Automobile Club. A consignment of 150 blue and white enamel road signs, costing $1.50 each, has just been received by the club. The officers felt that this expenditure was about all that they could afford at this time and that the erection of the signs would have to be left for a later date. The bright idea of a sign day then was hit upon. The scheme is this: Each member of the club who owns a car will be asked to appear at the club bright and early some morning. Nails and hammers will be a necessary part of the machine equipment that morning. A certain number of signs with full directions, as to where they are to be placed will be given to each motorist. Definite routes and territories will be marked out for each man. Two signs will be erected on each post. One will give the distance to Cleveland with the warning, "slow," "hill" or "danger" as the case may be and the other will read, "Cleveland Automobile Club, Hollenden Hotel." The idea of this second sign is to let tourists know that they will be welcomed at the Cleveland club when they reach the city. The signs and posts will mean an expenditure of $600.

The Cleveland club already is laying plans for its spring and summer runs. The first run of the year will be held next week if the weather permits. This will be the earliest opening the club has had. The first run will be to Norwalk, O.

LATE SHOW AT BANGOR

Bangor, Me., April 23—The best show ever held in Maine, according to motorists here, closed this evening after running a week. It was a success from the start and so well did it suit the dealers who were exhibiting that they all agreed to go in again next year. The show was held in the Auditorium and there were forty-one different spaces. Motor cars, cycles, accessories and aeroplanes were exhibited. The show was a miniature Boston show, for there was a surprising line of cars exhibited. Many of the Boston dealers were present the latter part of the week and they were surprised at the interest shown by the visitors. Because the roads in Maine do not dry out as early as in other section of New England it was thought best to have the show late, and this proved to be the right thing.

MOTOR JOB FOR GEORGE

Baltimore, Md., April 24—John E. George, of Queen Anne's county, has been appointed motor vehicle commissioner of Maryland, the position created under the new Swann motor vehicle law which was passed by the last legislature. Under the provisions of the law, the new commissioner will assume office the first Monday after May 1. His salary will be $3,000 a year.

BIG DEMAND FOR LABOR IN DETROIT PLANTS

DETROIT, Mich., April 25—Manufacturing conditions in Detroit have now simmered down to a question of labor. Never in the history of the city has there been such a demand for intelligent laborers, particularly machinists. In spite of the fact that scores of machine operators from other cities are arriving here every day, the situation has become such that the Detroit board of commerce has seen fit to place advertising in a number of other cities of the middle west and some of the east, setting forth the labor conditions in Detroit and soliciting the migration of laborers to the city, with skilled mechanics especially urged to avail themselves of the opportunity.

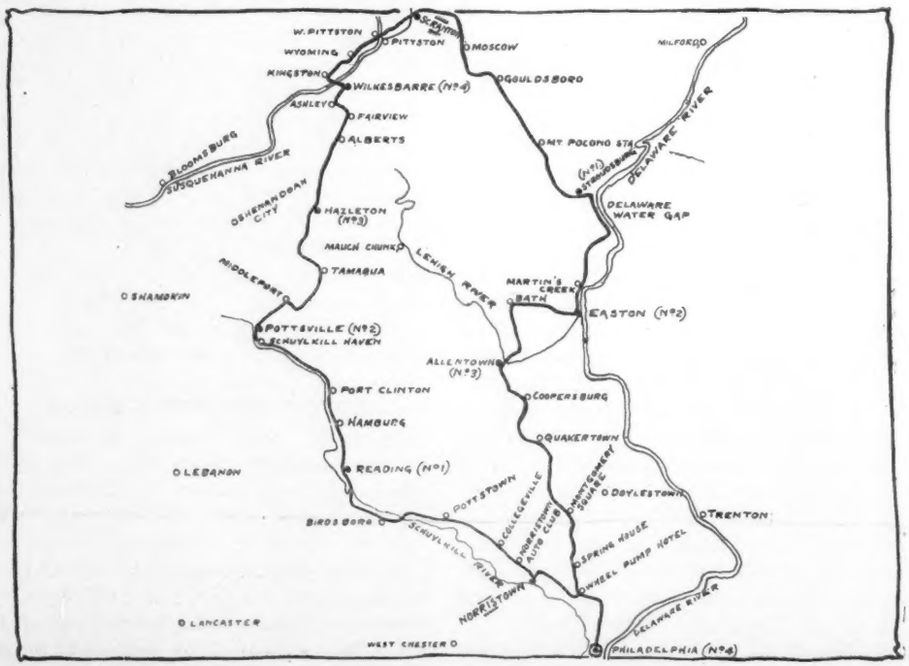
These efforts have met with considerable criticism from the cities in which the advertisements have appeared. The Rochester, N. Y., board of commerce has written Detroit, protesting against this as a breach of civic etiquette, and so have two other cities in a more or less official manner. The local people believe that the campaign is one that is bringing good citizens to the city and are not in the least inclined to abate their efforts. Arrangements are being made to house the increasing hosts. Practically all the outlying factories have subdivisions in which homes are being built and the spring is one of the most remarkable in this way in Detroit's history.

The most remarkable progress of any of the Detroit factories for the past week has been made by the Ford Motor Co., which, on Saturday, finished the shipping of a total of 1,035 cars for the week, all of which were assembled during that time at the firm's new plant in Highland's Park, where the shipping department is now located. The new factory of the Ford is now practically in complete operation, with the exception of the office building, which yet awaits the finishing touches. It is certain, however, that the day is not far away when the change of this department will be made, thus centralizing the Ford forces in the new plant.

The E-M-F company has completed its large factory addition at the main plant and is now located in the most elaborately equipped office of any of the local factories, as well as availing itself of considerable additional factory space. Elevators permit of easy access to the upper floors and the entire arrangement is systematically worked out. The E-M-F interests have also purchased the Glazier Stove Co.'s abandoned plant at Chelsea and probably will turn it into an accessory manufacturing establishment.

The Grabowsky Power Wagon Co., which has been looking for a site for a new factory for some time, has purchased the property at Mt. Elliott avenue and the Belt Line tracks, amounting in all to in the neighborhood of 9 acres, and has broken ground for a new factory, which will be by all odds the most ambitious of its kind in Detroit, devoted to the manufacture of commercial vehicles. The main building will be 300 by 62 feet and four stories in hight. At right angles and branching from this will be uniform buildings of concrete, 200 by 40 feet.

The Stuart Commercial Car Co. announces that it has leased the Co-operative Foundry Co.'s factory, on the Wabash tracks, between Junction and Campbell avenues, and will proceed to manufacture a considerable number of models of cars—duplicates of a sample car which has been in operation on the streets of Detroit for some time. The company was incorporated several weeks ago with a capital of $300,000, of which $65,000 has been paid in. The incorporators are William W. Walker, Alexander F. Walker, Michael B. O'Connor, Johnson Stuart, Walter E. Stuart and Charles H. Brooks. The company expects to make its own motor and most of its own car.



MAP OF ROUTE TO BE USED ON NORRISTOWN RELIABILITY RUN

REFINING BRAKE TEST

Norristown, Pa., April 22—The contest committee of the Norristown Automobile Club is so satisfied with the scheme adopted 2 years ago of keeping the cars in its annual endurance contest from bunching at controls and eliminating fast running that it has decided to incorporate the same provisions in the rules governing this year's run, which is scheduled to go to Scranton and return, May 18-19. No car will be allowed to lay in control, or at any point between controls, for a longer period than 10 minutes, under a penalty of 1 point per minute for each minute in excess of 10. The technical examination will be particularly severe this year, a backward brake test on a hill being included, the officials believing that a brake holding on a level is not an adequate test. Failure of brakes to hold going backward down a hill will cost the car 25 demerits per set of brakes. The rules also will provide against powerful cars with limited passenger-carrying accommodations getting into the small-car class and placing all the other contestants in that class at a disadvantage.

FALCAR GOING TO CHAMPAIGN

Chicago, April 25—Brisk competition among a dozen different cities in this section of the country has resulted in the acceptance by the Fal Motor Co. of Chicago of the bid made by Champaign, Ill., and during the summer the Falcar plant will be moved to the lively little college town. Champaign has offered to erect the factory and give the land, it having been agreed that the plant shall cover at least 100,000 square feet. It is probable that it will be a one-story structure and it has been promised that it shall be completed by August 1. Among the unsuccessful cities bidding for the plum were Aurora, Ill.; Kenosha and Milwaukee, Wis., and Goshen, Ind.

JOHNSON INCREASES CAPITAL

Milwaukee, Wis., April 27—The Johnson Service Co., of Milwaukee, Wis., manufacturer of motor trucks and pleasure cars, has voted to increase its capital stock from $1,000,000 to $1,500,000 in order to care for the growing business of its motors department. The action was taken at the twenty-fifth annual meeting yesterday. Professor Warren S. Johnson, president of the company since its organization, was presented

with a loving cup by managers, foremen and superintendents of the various departments in honor of the silver jubilee of the president of the company. The company will erect several new buildings at once. The official statement of finances given out by Professor Johnson shows earnings during the last fiscal year of $186,626.03. The net assets are $1,186,626.03. A dividend of 1¾ per cent was declared, payable May 1.

BADGERS PREPARE FOR TOUR

Milwaukee, Wis., April 25—The first annual Wisconsin reliability contest for the Milwaukee Sentinel trophy will be run beginning July 18, ending July 22, and lasting 5 days, covering practically all of the territory in central and southern Wisconsin. The tour will be over a route of 850 miles, or 170 miles per day. The rules governing the annual A. A. A. tour will be in effect. The start will be made at the Sentinel building at 7 a. m. on July 18. The first night control will be Madison, the state capital. The second night control is LaCrosse. The third day's run will end either at Eau Claire or Chippewa Falls. Appleton is the objective point for the fourth day, and the fifth and last day's run will be from Appleton to Milwaukee. The regular entrance fee is $50 per car. The tour is open to all owners and dealers. Bids for prospective pathfinders will be received by Chairman West until May 10. Matthew C. Moore, president of the Wisconsin State A. A., has been designated official pilot.

ELGIN ROAD RACE PROSPECTS

Chicago, April 27—The citizens of Elgin promise a definite answer next Tuesday night to the Chicago Motor Club regarding the financing of the proposed road race at that place. The citizens have appointed two committees—one to organize a $20,000 stock company and the other to secure the right of way. Prospects for the race are bright indeed.

Summary of Races on Last Day of Los Angeles Meet, April 17

TIME OF RACES

Ten-mile stock chassis, 161-230 cubic inches:

Miles	Laps	Total	Miles	Laps	Total
1..	:52.98	:52.98	6..	:52.89	5 :14.30
2..	:52.21	1 :45.19	7..	:52.94	6 :07.24
3..	:52.00	2 :37.19	8..	:52.09	7 :00.33
4..	:52.94	3 :29.13	9..	:53.22	7 :53.55
5..	:52.28	4 :21.41	10..	:53.19	8 :46.74

Three-mile stock car:

Miles	Laps	Total	Miles	Laps	Total
1..	1 :03.04	1 :23.04	3..	1 :21.83	4 :07.20
2..	1 :22.33	2 :45.37			

Ten-mile stock chassis, 301-450 cubic inches:

Miles	Laps	Total	Miles	Laps	Total
1..	:47.18	:47.18	6..	:45.49	4 :34.85
2..	:45.76	1 :32.94	7..	:45.41	5 :20.26
3..	:45.49	2 :18.43	8..	:45.54	6 :05.80
4..	:45.51	3 :03.94	9..	:45.40	6 :51.20
5..	:45.42	3 :49.36	10..	:45.41	7 :36.61

Two mile match race, second heat:

FIRST MILE

Benz	:41.28
Fiat	:41.56

SECOND MILE

Miles	Laps	Total
Fiat	:37.92	1 :19.48
Benz, about	:38.25	1 :19.53

One hundred-mile, stock chassis, under 600 cubic inches:

Miles	Time	Miles	Time
1	1 :01.62	51	39 :00.08
2	1 :48.23	52	39 :45.88
3	2 :34.10	53	40 :31.29
4	3 :20.07	54	41 :17.50
5	4 :05.85	55	42 :03.35
6	4 :51.66	56	42 :49.18
7	5 :37.62	57	43 :35.03
8	6 :23.71	58	44 :20.70
9	7 :09.96	59	45 :06.30
10	7 :55.73	60	45 :51.72
11	8 :41.89	61	46 :37.17
12	9 :28.11	62	47 :22.51
13	10 :13.98	63	48 :07.86
14	11 :00.10	64	48 :53.25
15	11 :46.34	65	49 :38.34
16	12 :32.82	66	50 :23.92
17	13 :18 92	67	51 :09.28
18	14 :04.88	68	51 :54.58
19	14 :50.43	69	52 :39.90
20	15 :36.12	70	53 :25.28
21	16 :21.80	71	54 :12.36
22	17 :07.33	72	54 :51.93
23	17 :52.95	73	55 :43.45
24	18 :38.45	74	56 :30.04
25	19 :24.19	75	57 :15.79
26	20 :09.92	76	58 :01.57
27	20 :55.35	77	58 :47.36
28	21 :41.18	78	59 :33.18
29	22 :26.33	79	1 :00 :18.80
30	23 :12.46	80	1 :01 :04.77
31	23 :57.29	81	1 :01 :50.65
32	24 :42.93	82	1 :02 :36.30
33	25 :57.51	83	1 :03 :21.86
34	26 :12.77	84	1 :04 :07.47
35	26 :57.97	85	1 :04 :53.12
36	27 :43.61	86	1 :05 :34.75
37	28 :27.97	87	
38	29 :12.31	88	
39	29 :57.21	89	1 :09 :19.80
40	30 :41.89	90	
41	31 :26.02	91	
42	32 :11.68	92	1 :10 :15.74
43	32 :56.94	93	1 :11 :01.45
44	33 :42.07	94	1 :11 :47.12
45	34 :27.05	95	1 :12 :32.98
46	35 :12.24	96	1 :13 :18.28
47	35 :57.41	97	1 :14 :04.66
48	36 :42.75	98	1 :14 :50.36
49	37 :26.51	99	1 :15 :36.25
50	38 :14.33	100	1 :16 :21.90

Ten miles, stock chassis, class C, division 2; 161-230 cubic inches displacement.

Car	H.P.	B.	S.	P.	Dis.	Driver	1	2	3	4	5	6	7	8	9	10
Cole	4-30	4	4		200.7	Endicott	2	2	2	2	2	1	1	1	1	1
Warren-Detroit	4-30	4	4½		226.2	Miller	4	4	4	4	4	4	2	2	2	2
Buick	4-20	3¾	3¾		164.4	Nikrent	1	1	1	1	1	2	.	.	.	.
Firestone-Colum.	4-26	4	4		200.7	Linthwaite	3	3	3	3	3	3	3	3	.	.

Time—8 :46.74. Rolling start

Three miles, stock cars, class A, division 2, $801-$1,200 class.

Car	H.P.	B.	S.	P.	Dis.	Driver	1	2	3
Ford	4.20	3¾	3¾		165.6	Pratt	2	2	1
Ford	4.20	3¾	3¾		165.6	Sterns	1	1	2
Ford	4.20	3¾	3¾		165.6	Swift	3	3	3
Ford	4.20	3¾	3¾		165.6	Olsen	.	.	.

Time—4 :07.20. Rolling start

Ten miles, stock chassis, class C, division 4, 301-450 cubic inches displacement

Car	H.P.	B.	S.	P.	Dis.	Driver	1	2	3	4	5	6	7	8	9	10
Buick	4-40	4½	5		318.1	Nikrent	1	1	1	1	1	1	1	1	1	1
Marmon	4-35	4½	5		318.1	Harroun	2	3	3	2	2	2	2	2	2	2
Marmon	4-30	4½	4½		286.3	Wade	3	2	2	3	3	3	3	3	3	3

Time—7 :36.61. Rolling start

Match race. Second heat

Car	H.P.	B.	S.	P.	Dis.	Driver	1	2
Fiat	4-90	5⅛	7⅜		608.6	Bragg	2	1
Benz	4-200	7 3-10	7⅞		1318.39	Oldfield	1	2

Time—1 :19.48. Rolling start

100 miles, class E, restricted to cars under stock chassis, class C, classifications under 600 cubic inches displacement

Car	H.P.	B.	S.	P.	Dis.	Driver	20	30	40	50	60	70	80	90	100
Marmon	4-35	4½	5		318.1	Harroun	1	1	1	1	1	1	1	1	1
Buick	4-40	4½	5		318.1	Nikrent	.	2	2	2	2	2	2	2	2
Knox	6-60	5	4¾		559.5	Oldfield	2	.	.	3	3	3	3	3	3
Fiat	4-60	5½	5½		487.0	De Palma	3	.	3	.	4	4	4	4	4
Marmon	4-30	4½	4½		286.3	Wade	.	3	.	.	.	.	.	.	.
Apperson	4-50	5½	5		431.9	Hanshue	.	.	.	.	.	.	.	.	.

Time—1 :16 :21.90. Standing start

ROUTE THAT WILL BE FOLLOWED IN MILWAUKEE SENTINEL RELIABILITY

Motor Count Just Made by Germany

BERLIN, April 10—During 1910 the number of cars of all kinds operated in Germany increased to the extent of 6,911, or in other words on the first day of this year there were 27,462 motor cars in Germany, while on January 1, 1909, there were only 20,551. A year before that the government records show that there were 16,214 cars in Germany, or 5,142 more than on January 1, 1907, when the total was 11,072. Thus, in 4 years the increase amounted to 16,390 cars or an average of 4,097 cars per year.

Of the 27,462 cars in Germany on January 1, 1910, there were 24,639 cars used for carrying people and 2,823 of the commercial or industrial kind, which includes taxicabs, motor buses and business vehicles. Compared with the records of the preceding 3 years, it shows great increases, as the appended table tells:

Year	Pleasure cars	Increase	Commercial cars	Increase
1910	24,639	6,092	2,823	819
1909	18,547	3,876	2,004	461
1908	14,671	4,556	1,543	586
1907	10,115	....	957	...

While it is quite natural that the number of pleasure cars should increase the German trade papers are much more elated over the big increase in commercial cars over the preceding 12 months. They point out that the future of the industry lays in this particular line of cars and that all efforts should tend to make the commercial cars the best that can be made. The manufacturers are heeding the advice and all those concerns which make pleasure vehicles, either already make or are adding commercial cars to their output.

As the table shows, the number of passenger cars of more than 40 horsepower is exceedingly small. In fact, it seems almost beyond belief. It must not be forgotten, however, that the German way of calculating horsepower is different from the American formula and that a German 40-horsepower would not be far from being a 70 or 80-horsepower car in the United States.

TOURING CARS

Year.	Up to 8 h. p.	8 to 16 h. p.	16 to 40 h. p.	Over 40 h. p.
1910	12,595	7,341	4,605	98
1909	9,434	5,441	3,595	77
1908	7,457	4,395	2,754	65
1907	5,111	3,278	1,674	52

COMMERCIAL VEHICLES

1910	1,425	612	757	29
1909	1,035	502	448	19
1908	825	418	284	10
1907	516	313	126	2

Out of the total of 27,462 cars 3,054 are credited to the capital, Berlin. Of this number 2,714 are passenger vehicles and 383 are commercial cars. Of the ninety-eight cars in all Germany rated at over 40 horsepower, ten are in Berlin.

A banner year for Germany from the standpoint of foreign visitors was in 1909. All told, 12,934 motorists and motor cyclists from other countries passed through the customs houses. This means an increase of 5,021 over the corresponding period of 1908 and 7,248 more than in 1907. This record was brought about only because the German government rescinded some of its stringent rules and regulations which provoked such general complaint 2 years ago. The wise action of the officials is thus shown and needless to say the German hotel and innkeepers, garages, supply stations and many other branches in trade greatly profited by this numerous visiting army of strangers. Of the 12,934 foreign vehicles which entered upon German territory 11,886 were pleasure cars, twenty-four were commercial cars and 1,024 were motor cycles.

Although ranking only sixth on the list the United States provided 686 or 5.5 per cent of the visiting motorists. This is a very large number when the distance from where they came is taken into account and also the expenses of coming to Europe.

France is first, as 4,165 of its people came to Germany last year. Austria is second with 2,626, Belgium third with 1,786, Switzerland follows with 1,698, then comes Holland with 941, the United States is next, followed by Great Britain with 440 to its credit. Italy is the next one with 157 or only two more than Russia. Then the number runs down and it shows that people from almost all over the globe motored in Deutschland last year.

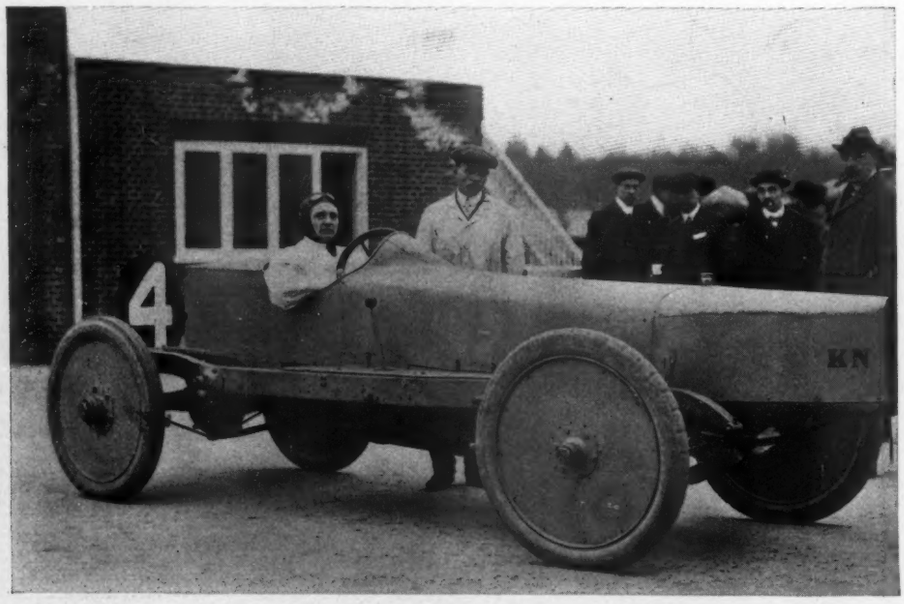
It is strange to notice that out of such a formidable army as 12,934 visitors only twenty-three came to Berlin, eight of them being motor cyclists. Yet they always said that Berlin is one of the wonders of the world.

Paris Takes Its Count

Paris, April 10—Some interesting figures have recently been made public by the Paris street traffic inspection department. It concerns the records of the horse-drawn and motor, steam and electrically-operated vehicles of all kinds in Paris and the department of the Seine. While the figures for Paris and the province are not separated, it nevertheless is certain that fully 90 per cent of the totals applies to the metropolis alone.

Taking the totals, it is shown that the total number of vehicles employing mechanical traction, which was 5,599 in 1901, was 15,822 in 1909, or an increase of 200 per cent, while the number of horse-drawn vehicles increased from 51,468 to 61,499, or only 5 per cent. If the figures of the standing on the first of the present year would be completed it would show for the mechanically-propelled vehicles an increase of nearly 220 per cent. All the figures are for the years 1901 and 1909. It might be added with reference to the taxicabs that while not one was recorded in 1901 only three were listed in 1902 and eight in 1903. By the first of January, 1905, there were thirty-nine, while 4 years later, 1909, they numbered 3,478. The number of horse-drawn cabs in operation in 1901 was 10,445, while last year only 8,085 were left in service as against 3,478 motor cabs and taxis.

The horse was king, however, when it came to the number of commercial or industrial vehicles drawn by equines. In 1901 there were 34,111 such vehicles in use, while in 1909 the number had increased to 46,915. The number of private vehicles, such as master's cars, operated by horses is not given, but the number of pleasure motor cars jumped from 3,865 in 1901 to 8,203 in 1909. There is an item which is not quite clear. It refers to "various vehicles for hire." Under this heading it shows that there were 4,313 such vehicles in 1901 and 4,578 in 1909, while the number of motor cars for this purpose which was 117 in 1901 was 1,672 in 1909. The number of commercial and industrial motor vehicles is not given.



HANCOCK IN VAUXHALL AT BROOKLANDS

There are 113 motor omnibuses, while the horse-drawn omnibuses, of which there were 760 8 years ago, numbered only 596 last year. Also the number of horse-drawn street cars fell off considerably—104 in 1909 as against 302 in 1901. In 1901 the number of electric and steam tramways was 1,145, but last year the total reached 1,528, while the number of such cars with trailers increased from 462 to 712, it is reported.

TRIAL FOR LONG-STROKE FOURS

Paris, April 10—Long-stroke four-cylinder motors will figure prominently in the sixth annual small-car race to be held next September on the Boulogne-sur-Mer course. Up to the present the leading makers have preferred a long-stroke single-cylinder motor in preference to a four, and for 3 years in succession the race has been won by a one-lunger. Starting with a stroke of about 5 inches, for the maximum bore of 3.9 inches, increase has gradually been made until in the last two races all the leading cars have had single-cylinder motors of 3.9 bore by practically 10-inch stroke.

This year for the first time there will be a majority of four-cylinder racers with the maximum bore of 2½ inches and a stroke of 7⅘ inches, which is a stroke three times greater than the bore, compared with 2½ to 1, the highest ratio yet adopted on any of the single-cylinder models. Although the race will not be held until September, the Hispano-Suiza firm, of Barcelona, already has brought forth its racing models with the cylinder dimensions given above. The motor, which has its cylinders in one casting, runs at 1,800 revolutions, and is declared to develop 40 horsepower.

Although none of the French firms has yet produced cars for the fall race, it is known that several of them having previously adopted single-cylinder models of 100 millimeters bore, will this year build fours with the maximum bore of 2½ inches and the unusual stroke of 7⅘ inches. Among these firms are Sizaire-Naudin, specialists in long-stroke singles, and their principal rival, the Lion-Peugeot Co. Entries at the present time are eleven in number, three being from the Hispano-Suiza firm, two from the D. S. P. L. company, three from the Calthorpe company, of Birmingham, and three from Lion-Peugeot.

Although the general ratio of stroke to bore on modern French cars of low horsepower is 1.5 to 1, a popular size being 80 by 120 millimeters—3.1 by 4.7—several firms have considerably increased this for even their ordinary touring models. Thus Gregoire produces a semi-racing type of runabout, the cylinder dimensions of which are 3½-inch bore to 7⅘-inch stroke, or a ratio of 2.2 to 1. Labor-Picker has a standard motor, used in several of the boats at the recent Monaco races, the dimensions of which are 2½ by 8⅕ inches bore and stroke, or a ratio of 2.3 to 1. Sizaire-Naudin has now under construction a series of fast four-cylinder runabouts the cylinder dimension of which are 2.7 by 6.1 inches, or a ratio of 2.4 to 1, the highest yet adopted for a standard car.

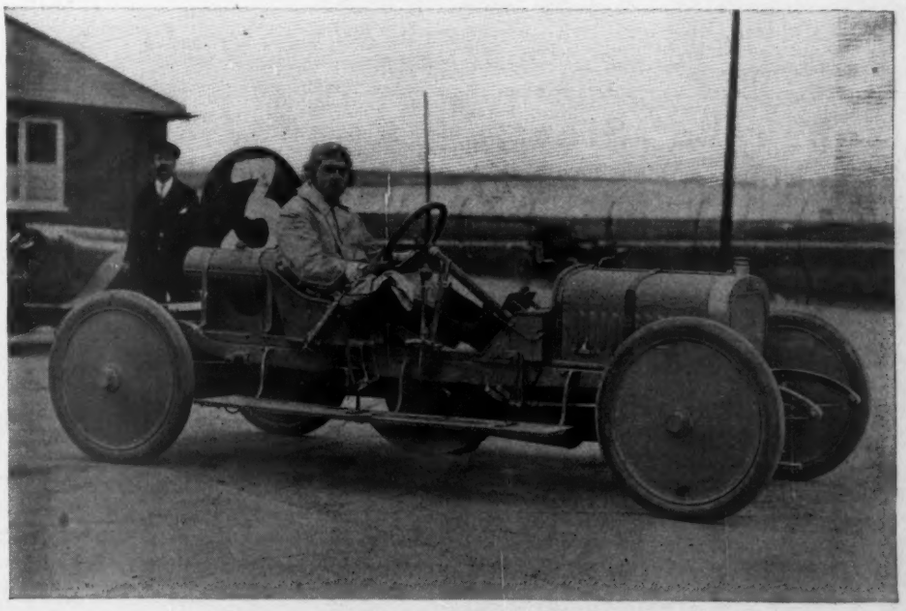
Demountable wheels and rims can be used in the race. The entry fee is $100 for one car, $160 for two and $200 for three. L'Auto, a French newspaper promoting the event, will receive the entries.

Big Entry For Prince Henry Tour

BERLIN, April 10—For the third annual Prince Henry tour 126 cars have been entered, which is thirteen more than last year. From among the 126 cars entered an even 100 are of German construction, the other twenty-six being foreign-made cars. Last year there were entered eighty German cars and thirty-three imported. The 100 German cars of this year represent twenty different concerns. This year the Opel again leads, there being nineteen entered or three more than in 1909. Second on the list is the Benz with thirteen as against ten last year. Adler and Bergmann are fourth, there being eight each of these cars entered. The Mercedes comes next with seven, or one fewer than a year ago. The big surprise of this year's tour will be the entire absence of Horch cars, which numbered eight last year and which won the trophy 2 years ago. The other German cars entered are five Protos, five Brennabor, four Deutz, four Stewer, four Mathis, four Dixi, three Komnick, two Presto, two Dux, and one each of the Hansa, C. Benz Sohne, N. A. G., Bugatti and Luc. The twenty-six foreign cars entered this year represent only seven different concerns, while the thirty-three last year represented seventeen. Eleven Austrian Daimlers are entered while last year there were only three. Four R. A. F. cars and two Puch will further defend the Austrian colors. France will leave it to one Berliet and to one Delaunay-Belleville to uphold its reputation, while Italy will have four Fiats to represent it. Three Vauxhall cars will be there from Great Britain. This year again it will be seen that no American car has been entered.

VIENNA SHOW PROSPECTS

Vienna, April 6—The success of the eighth annual show of Austria is assured. Up to date not far from 100 concerns have secured space and among them are all the leading car makers. As usual it will be a very cosmopolitan affair. About every country of prominence in the motor car making field will be represented, except the United States. To Vienna will come the dealers and many prospective buyers located in the many Balkan states, which means Bulgaria, Servia, Roumania, Montenegro, Greece, Turkey, as well as Hungaria and Russia. It has been shown that more than a third of all the cars sold in Vienna go out to some of these countries where no shows have as yet been promoted because there are but few concerns or individuals in these small countries which are in the business. The time will, however, come when the motor car will find its way into the wealthy classes of those Balkan states and that is why many dealers and manufacturers do not hesitate in spending much money now at Vienna expecting to be able to make up before long. The American car in all these countries is quite unknown, but the people have heard a good deal of the leading French and German and Austrian cars and when someone buys a car it is one of the known cars which is sought.



COATALEN IN SUNBEAM AT BROOKLANDS TRACK

Expert's Opinion on Good Methods

EDITOR'S NOTE—The following paper on "Methods of Preventing Dust on Roads" was read by L. W. Page, director of the road inquiry division of the department of agriculture, before the Massachusetts Highway Association, Boston, March 31, 1910.

THE first experiment in the treatment of roads with dust preventives conducted by the office of public roads was made on Queen's Chapel road, in the District of Columbia, during the summer of 1900. About 4,650 feet of this road were treated with 5,000 gallons of a residual, greasy-base oil. The road was of a sand-clay nature, and the oil prevented dust through the remaining portion of the summer, and, to some extent, in the following spring. The oil had a very disagreeable odor, which lasted for several years.

The next experiment was made with a greasy-base, sweet oil, at the extreme west of D street, in the District of Columbia, in the summer of 1904. This street had been unimproved and was of a very clayey nature. The oil incorporated with the clay made a very plastic mud. It laid the dust successfully, but the street was avoided as far as practicable by traffic.

The first experiments conducted in a scientific way were made at Jackson, Tenn., during the spring and summer of 1905. In these experiments crude and residual semi-asphaltic petroleums and dehydrated coke-oven tars were applied to the road surface, both for the purpose of laying dust, and of binding the stone fragments together. The dust was well laid for a very appreciable length of time by means of a single application of from .3 to .5 gallon of bitumen per square yard of road surface. Considerable differences were noticed in the binding value of the different materials, the oil residuums and tar proving better in this respect than the crude petroleums.

Stands Test of Time

In February, 1908, an inspection of the experimental sections showed that where traffic had not been heavy the roads treated with the residual oils and tars were still in excellent condition, being well bonded and impervious to water. Dust formation from the road material proper had been appreciably lessened, and in one case, where a second application of tar had been made in 1906, the road was practically dustless. An inspection made in January, 1909, showed that most of the binder had disappeared from the surface of all the roads except the one which had received two applications of tar. Deterioration had been greatly lessened as compared with similar untreated roads, and as late as December, 1909, beneficial effects of the treatment were still evident.

During the summer of 1907 experiments were conducted at Wayland, Mass., in cooperation with the Massachusetts highway commission, for the purpose of studying the suitability of various tars for the surface treatment of macadam roads. The materials selected were a crude water-gas tar, a crude gas-house coal tar and a fluid refined tar preparation. These materials were applied in a variety of ways upon a road subjected to exceedingly severe traffic conditions. In November of that year all of the treated sections were in good condition and were practically dustless. After passing through a hard winter and a second summer another inspection was made, at which time the superiority of the refined tar over the crude products was very apparent. In one of these experiments, where the road was first spiked up and reshaped before applying the refined tar, the results were of a more lasting character than in the other experiments. None of these sections was entirely dustless owing to material brought in from outside sources. It would have been advisable to have retreated these sections during the spring of 1908, at which time a much lighter application of tar than that made during the first treatment would have duplicated the former results. A second treatment was deferred until the summer of 1909, when a surface application of refined tar was made over the whole road.

Some Results Unsatisfactory

As compared with the best of the Jackson experiments, the results of treatment at Wayland, while satisfactory, were not lasting, owing to severe traffic and climatic conditions encountered at the latter place. Very interesting and valuable information was, however, acquired from both series of experiments, which will be summarized at the conclusion of this paper.

While the tar experiments were being conducted at Wayland a semi-asphaltic oil emulsion also was tried out in the surface treatment of a section of the same macadam road, and proved very efficient as a temporary dust layer and road binder. During the same summer both crude and residual oils were applied to sections of a gravel and a macadam road at Bowling Green, Ky. The results were quite similar in effect to those obtained from the use of like materials at Jackson, Tenn. At Bowling Green an experiment with rock asphalt as a surfacing material in macadam road construction also was tried. When inspected in January, 1909, the road was in excellent condition, being well bonded, smooth and free from ruts. When last inspected in May, 1909, it was smooth and firm and presented much the same appearance as a first-class asphalt city street, although here and there the crushed stone of the upper course could be seen where the thin surfac coating of the rock asphalt had worn away. The wearing course of stone was securely bound together by the rock asphalt, which had been forced into the voids between the individual stone fragments.

Calcium Chloride Experiment

During 1907 one other material, calcium chloride, was experimentally employed as a dust preventive in the treatment of a macadam road surface at Washington, D. C. Two applications of a 10 per cent solution of the pure salt made at the rate of .4 gallon per square yard, laid the dust very sucessfully for a period of 6 weeks, no additional applications of water being required. At the end of this period another application was made with similar results. A total of five applications was required to lay the dust throughout the dusty season.

Having obtained considerable data in regard to the surface treatment of roads, this method of dust prevention was temporarily abandoned, and, during the summer of 1908, particular attention was paid to the use of binding materials in road construction. A series of experiments with oil, tar and asphaltic preparations applied according to the mixing method was carried on at Newton, Mass., in coöperation with Charles W. Ross, street commissioner of that city. An oil-lime-molasses mixture also was employed as a binder in one of these experiments. During the same year an artificial oil asphalt was used in the construction of an earth road at Independence, Kan., and some experiments were conducted at Birmingham, Ala., with tar as a binder for a slag macadam.

Good Grade of Binder Needed

Where a good grade of binder, as shown by analysis, was employed the results in most cases have so far proven satisfactory. During the past year the work at Newton and Independence was inspected and a report of these inspections will shortly appear in our progress report for 1909.

During the summer of 1909 a rather extensive series of experiments with road binders was begun at Ithaca, N. Y., in coöperation with Cornell university. Owing to lack of time and proper facilities for heating and applying the materials, this work was not completed, and we, therefore, expect to continue it this year. Various bituminous road materials now found upon the market have been or are to be employed in macadam road construction according to both the penetration and the mixing methods. In this work several experimental sections of roadway have also been laid with Kentucky rock asphalt, cement concrete and various kinds of paving brick.

Refined Tar Is Used

The use of a refined tar in the construction of slag macadam was experimentally tried at Youngstown, O., during 1909, and various forms of slag macadam studied. This work was carried on in coöperation with the Carnegie Steel Co., Pittsburg, Pa., and already considerable information has been accumulated in regard to the best method of utilizing slag for road purposes. It has been found that certain kinds of open hearth slag act as excellent road binders when crushed sufficiently fine and puddled upon the road with water. Other slags have been found to be deficient in binding or cementing value, no matter how fine they may be pulverized. Certain types, particularly of the blast furnace slags, may be converted into very serviceable binders if mixed with a small proportion of lime, and their use in this connection is now being studied.

During 1909 some attention was paid to the use of crude and concentrated waste sulphite liquors in the surface treatment of macadam roads, and the results obtained indicate that when properly prepared such products act as very excellent dust preventives and temporary binding mediums.

With this brief review of the work of the office of public roads with dust preventives and road binders during the past 10 years, we may proceed with a consideration of the fundamental principles of selection, application and serviceability of such materials as were developed by results so far obtained from these experiments. In a paper of this nature it is impracticable to enter into an exhaustive discussion of the subject and to take up in detail all materials experimented with. It may be said, however, that service results have been carefully correlated with work in the laboratory, and that the conclusions here presented are based upon a careful consideration of the whole subject, both from a theoretical and practical standpoint. There is much yet to be learned in regard to the characteristics and use of dust preventives and road binders, but I believe that a sound working basis has already ben established as a starting point for further investigations.

Three Good Methods

There would appear to be three possible methods of preventing dust on roads, any or all of which may be employed according to conditions. They are:

1—The sanitary removal of dust, or the scavenging of roads as often as necessary to prevent excessive dust accumulation.

2—The surface treatment of roads with substances capable of holding down the dust already present and of laying dust brought in from outside sources.

3—The internal treatment of roads with binders capable of reducing road wear and disintegration and, therefore, of dust formation from the road material proper.

In the treatment of country roads it is evident that only the second and third methods are at all practicable. Surface treatment must of necessity be more or less temporary in effect owing to the fact that the material applied is either removed by wear in a comparatively short time, or soon becomes saturated with dust and, therefore, incapable of retaining fresh dust which may be formed. Under ordinary conditions the most that can be expected of a single application of any material to a road surface is that dust formation will be appreciably lessened for a period of 1 year, and that a road so treated will be reasonably dustless for that length of time. More lasting results are rather exceptional, and, in fact, many of the dust preventives now found upon

Nebraska Starting Road Campaign

OMAHA, Neb., April 25—Nebraska just now is in the throes of a good roads movement which is rapidly becoming state wide. Meetings which have been held in various counties culminated recently in a state good roads session in Omaha, at which Governor Shallenberger and A. N. Johnson, of the Illinois state highway commission, were the principal speakers. In addition to prominent men from all over the state, motorists from the various cities of the state were present and took an active part in the proceedings. As a result county organizations already have been formed and the newspapers have been enlisted in the cause of keeping up a hot campaign until the legislature meets and then getting that body to pass legislation favorable to good roads. One object of all the various good roads associations in the state will be the creation of a state highway commission, a demand for which was made in resolutions adopted by the state meeting.

At a meeting of farmers in Jefferson county, Neb., prizes were offered as follows for the best mile of road in the county: First prize, $50; second, $30; third, $20; fourth, $10.

A committee was appointed to see to the construction of a number of road drags, which are to be loaned to farmers who will promise to keep a mile of road dragged. Subscriptions already have been made to a $1,500 fund for the building of the drags.

# of Preventing Dust on Highways

the market are intended to be applied a number of times during a season. Such materials may be termed dust palliatives, while those capable upon one application of laying the dust successfully for a year and of binding together the finer particles of the wearing surface may be called semi-permanent binders.

Permanent Binders Defined

The term permanent binders may be given to materials employed in the internal treatment or construction of roads. They are capable of preventing dust only by preserving the road from excessive wear and disintegration. When such roads become dusty, as they invariably will in the course of time, it will be necessary to employ one of the first two methods in order to keep them free from dust. The facts above mentioned should serve as a guide in the selection of dust preventives for use under any given set of conditions.

Water is, of course, the most common material employed as a dust palliative, but in most cases it is unsatisfactory, owing to its very temporary effect. Calcium chloride applied in solution increases the value of water as a dust preventive, but does not, as a rule, act as a dust preventive itself. Owing to its hydroscopic nature it serves principally as a moisture retainer, although it also absorbs moisture from humid atmosphere to a considerable extent, and, therefore, keeps the road surface in moist, or semi-moist, condition for a much longer period than water alone. It may, therefore, be classed as a dust palliative.

Crude Waste Sulphite Liquor

Experience would tend to show that crude waste sulphite liquor is but little more effective as a dust preventive than water alone. It does, however, contain a certain amount of binding base which acts as a powerful road binder if sufficiently concentrated. As this base is soluble in water it only can be considered as a temporary binder. Best results have so far been obtained by the application of a concentrated solution of about 1.13 specific gravity to macadam road surfaces, at the rate of approximately .5 gallon per square yard. While it is not likely that the dust will be successfully laid for an entire season by this means, the material remains effective as a binder for a very considerable length of time, so that under favorable conditions it may be placed in the class of semi-permanent binders. In common with calcium chloride, it has the advantage of being easily applied in any dilution by means of an ordinary sprinkling cart.

We have found crude water gas tar to be very serviceable as a dust layer, but rather poor as a road binder. When properly refined, however, it can be converted into an excellent binder which compares favorably with refined coal tars and oil residuums, The crude material is sufficiently fluid to apply by means of a watering cart and a single application of somewhat less than .5 gallon per square yard will prove effective for some time.

Oil Emulsions Probably Satisfactory

Oil emulsions, if carrying a good asphaltic base oil, are probably as satisfactory as any of the temporary binders, and may often be employed to advantage in the surface treatment of macadam roads. The use of crude coal tar either as a temporary or semi-permanent binder is not to be advocated unless the material is sufficiently fluid to apply cold. If the tar is too viscous to apply in this manner it may be cut to the desired degree of fluidity with crude water-gas tar, the resulting mixture being in some respects preferable to either material alone.

Crude semi-asphaltic petroleums are about on a par with such mixtures both in respect to their dust-laying and road binding properties.

With all of these materials which are employed cold it may be desirable to apply them a number of times during a season. No definite rule can be laid down as to just how often such applications will be required, as this is entirely dependent upon local conditions. More satisfactory and economical results may often be obtained by means of a number of light applications than with a single heavy one, and this is particularly true of those materials which are deficient in true binding base, and act more as dust preventives than as road binders.

Should Last One Season

Materials such as the residual oils and tars which require heating before they can be applied should prove effective upon a single application for at least one season, or otherwise their use is not apt to prove economical. It is seldom advisable to employ either crude oils or tars when heating is required, owing to the rather temporary effect of such materials and to the fact that it is troublesome to heat them. This is due to the presence of water, which even in small amounts causes frothing or foaming over when the temperature is raised above 90° centigrade.

Heated materials may best be applied to road surfaces by means of specially designed distributors which are equipped with heating and spraying devices. Machines which apply the binder under pressure in the form of a fine spray perhaps are the most desirable type, and their use is to be recommended. By this means the quantity applied per square yard may be accurately gauged and proper penetration of the binder into the road surface is assured. If such machines are not employed it is often necessary to broom the material into the road, and this is a tedious and costly operation.

Coming now to the more permanent binders, we may consider their use according to two general methods of construction, known as the penetration or grouting method, and the mixing method. Among the permanent bituminous binders which we have so far employed may be mentioned the heavier residual oils and tars which are of semi-solid or solid consistency, fluxed oil and tar pitches and solid native bitumens, and fluid cut back products which are capable of increasing in consistency after application, by volatization of the lighter constituents.

Construction of Road

When employing the penetration method we have found it to be best practice to construct the road as follows: Upon the sub-grade, prepared as for ordinary macadam work, a foundation course of No. 1 crushed stone is placed to the desired depth and well rolled. Sufficient screenings are then applied to fill the surface voids, care being taken that there is no excess of fine material which will prevent the wearing course from keying into the foundation. The road is then rolled until absolutely firm, more screenings being applied if necessary to take the place of those worked into the foundation. The wearing course of No. 2 crushed stone, clean and free from dust and screenings, is then applied to a finished depth of 2 or 3 inches, and this course lightly rolled. The hot bitumen is next poured or sprayed upon the road at the rate of from 1 to 1½ gallons per square yard, after which a light coat of clean ½-inch stone chips, free from dust, is applied and the road well rolled. A seal coat of bitumen is then painted upon the surface at the rate of from .3 to .5 gallon per square yard, after which screenings are applied and rolled in until the road is smooth and firm.

Such a method of construction should produce a durable road from which dust formation is reduced to a minimum. The mixing method is, however, to be preferred because of the greater certainty of obtaining an absolutely uniform wearing surface in which each individual fragment is known to be covered with the binder.

In general, the mixing method is conducted as follows: Upon a foundation course of crushed stone, prepared in the same manner as described under the penetration method, a mixture of crushed stone and bitumen is laid to a finished depth of from 2 to 3 inches and rolled with the addition of screenings. A paint coat of bitumen is then applied and the road finished off in the manner previously described. The mixture of stone and bitumen may be prepared either by manual labor or machinery, preferably the latter, and the mineral aggregate may be graded in any approved manner. For country road work the crusher run of stone from 2 inches to 1½ inch to dust may sometimes be satisfactorily used. In the experimental work of the office a mixture of 27 parts crusher run of from 1½ inch to ¾-inch with 10 parts crusher run of from ¾-inch to dust have been found to produce a very dense aggregate. Such an aggregate should be mixed with not less than 6 per cent of bitumen, and neither the stone nor bitumen should be heated above 350° centigrade.

Application of Rock Asphalt

The application of rock asphalt in macadam road construction may in a certain sense be considered as a combination of the penetration and mixing methods. This material, if containing a good grade of bitumen, will serve as a permanent binder. It has been mixed by nature so that each individual fragment is thoroughly coated with the binder. It is seldom suitable for use as a wearing surface of any considerable thickness owing to the softness of the bitumen and to the fineness of the mineral particles which are not as a rule well graded. If forced into the wearing course of a newly constructed macadam road to which no screenings have been applied, it may, as has been demonstrated, prove to be a very serviceable road material which prevents excessive dust formation by reducing wear and disintegration.

In order that they may be kept dustless, it is necessary that bituminous constructed roads, in common with all others, be treated from time to time according to one of the first two methods mentioned earlier in this paper. That is, they must either be scavenged or their surfaces treated with temporary or semi-permanent binders. It will be found that the use of a good semi-permanent bituminous binder in comparatively small amounts will not only lay the dust satisfactorily upon these roads, but that such treatment will appreciably lengthen the life of the road by revivifying the old binder originally used during construction.

Portland Cement as a Binder

Portland cement is in some respects an almost ideal permanent road binder, especially when motor traffic only is encountered. When mixed in proper proportions with a suitable mineral aggregate, it produces a hard, rigid concrete, well designed to withstand the shearing strains exerted upon it by the wheels connected with the driving mechanism of motor cars, and practically unacted upon by the large pneumatic rubber tires of such vehicles. Under steel-shod horse-drawn traffic it is, however, far from ideal, owing to its lack of resiliency and tendency to spall under impact and abrasion.

Investigations are now being conducted by the office of public roads with a view to finding some way of overcoming these undesirable properties. While much experimental work will yet have to be done along this line, what has already been accomplished would seem to indicate that certain fluid petroleum residuums may be used to advantage in wet cement concrete mixtures, both for the purpose of waterproofing the concrete and reducing its tendency to spall. It has been found that there is little difficulty in incorporating petroleum residues with such mixtures providing they are sufficiently fluid to handle cold, and some of the oils seem to produce no loss in strength of the concrete in which they are used. We hope in the near future to try out some of these mixtures in the construction of experimental roads where it will be possible to study the results produced under actual service conditions.

District Rules on License Tags

WASHINGTON, D. C., April 23—The district commissioners threw a bomb in the camp of the motor car dealers recently when they addressed a letter to each one calling attention to the fact that the corporation counsel had advised that upon the sale, transfer or assignment of a motor vehicle by one owner to another, a new identification number tag and registration tag was required. The dealers were notified that the enamel identification number tags issued to them and used by them as identification tags to be used on motor vehicles while in opertaion for demonstrating purposes must not be transferred from one vehicle to another under any circumstances. Such use of a number tag, they were further notified, will be regarded as valid grounds for enforcing the penalty for violating the law in the premises.

When the present motor car law was put into effect several years ago the deaiers were given a series of numbers for use on their demonstrating cars, these numbers being interchangeable on the cars of the dealers to whom they were issued. The dealers point out that the strict enforcement of the regulation as outlined by the district commissioners will work a hardship to them, as well as cause them considerable expense in continually taking out new numbers for the cars they demonstrate and then sell. The matter is to be laid before the commissioners by a delegation of dealers, who will urge that the old system be continued in vogue.

The Readers' Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

To the Readers of the Clearing House columns:

Motor Age has insisted of late on bona fide signatures being attached to every communication published in these columns. It has come to the attention of Motor Age that some signatures, which apparently have been bona fide, have proven otherwise, in that communications addressed to them have not been received and the postal authorities have replied that such parties are unknown. Where cases of this kind arise, an investigation will be made and the correct names of the offending parties published. Motor Age has in the past discovered the correct name and address of one party guilty of wrong signature and will spare no efforts in the future to hunt down other offenders of this nature.

FLOODING THE TROUBLE

OELWEIN, IA.—Editor Motor Age—On our 1910 model 10 Buick we have a Schebler carbureter fitted, and I find on this carbureter a smal hole about the size of a pin hole on the under side between the float chamber and the air intake. This hole leaks more or less gasoline, especially on one of our Model 10s, where the hole is about twice the size of a pin. Is this hole there for a purpose, and if so, what? —Oelwein Auto Co.

The hole to which you refer is there for the purpose of allowing any gasoline which may accumulate in the intake pipe or mixing chamber to escape. Your trouble is due to flooding of the carbureter, that is, the gasoline is overflowing from the spraying-nozzle. This is caused by something that prevents the float valve from seating properly; it may be dirt on the valve seat, or mal-adjustment of the float valve. Examine the float valve seat; it may need grinding in; this is done by simply rotating the needle on its seat without the use of any abrasive substance. If the float valve seat is in good condition and the flooding continues, change the float level by means of the adjustment on the float valve.

CAN BE USED AS CONDENSER

Toronto, Canada—Editor Motor Age—Will Motor Age through the Readers' Clearing House tell me if in changing a Buick gasoline car to a steam one, could I use the radiator as a steam condenser, or would it need any changes?—Henry J. Collins.

As far as the construction of the Buick radiator is concerned, if it is of sufficient capacity for the power plant you intend to install, no changes would be necessary in using it as a steam condenser.

FROM FAR-OFF HAWAII

Honolulu, Hawaii—Editor Motor Age—I note in the Readers' Clearing House, Motor Age, issue March 24, that a subscriber is having trouble with a Buick Model 10, fitted with a Remy magneto, characterized by misfiring in two cylinders on slow speeds. As I had this identical trouble, and paid out over $100 in grinding valves some six or seven times, putting in new piston rings, and other proceedings which benefited only the owners of the garage, before hitting upon the seat of the trouble, I feel called on to help my fellow motorists by disclosing the remedy which cured my ills. The fault lay in the magneto. The circuit-breaker consists of a V-shaped piece of metal M, Fig. 1, between the arms of which turns the armature and a cam C, which is elliptical on the cross section. The wider diameter strikes against one of the arms A of the V, throwing it sideways, thereby breaking contact with the points P on the opposite arm A1, and the threaded screw passing through the metal box. Where the armature cam strikes upon the arm A is fixed a metal plate L. It will be easily seen that when this becomes worn, the points P on the other side, owing to the depression from wear, will be brought closer together, making the engine miss—why I am not prepared to say, but it does, and which can be remedied by screwing the adjusting screw outwards; but there is bound to come a time when the amount of wear cannot be so corrected, and then the only remedy is to have a new plate put on the arm of the V. I have to do this every 2 months or so, and do it as soon as I find that the jerky movement this trouble causes cannot be corrected by screwing out the adjustment screw. With me this cures the trouble effectually, the car running as smoothly, and continuing to do so, as when new, and never giving any trouble in the interval. If there is nothing wrong with the compression of the subscriber's car, and the carbureter is right, if he will put a new plate on the arm referred to, and so set his points that the engine runs without missing with closed throttle and retarded spark, I feel sure his car will no longer buck along the road like an unbroken mustang, which is what mine resembled for a time.—A. N. Sinclair.

The hint given in the above communication is a valuable one, and Motor Age advises that if the writer will loosen up the tension of the spring S a trifle and oil the cam and plate occasionally, the life of the plates will be greatly increased and fewer renewals required. The V-shaped part of the magneto may be taken off by removing the nut or stud N, and the plate L can then be readily removed by cutting off the heads of the two copper rivets with which it is secured to the arm. A new plate and rivets may be obtained from the factory or any of the local agents at a cost of 20 cents.

IS AN ELECTRIC SYSTEM

Wausau, Wis.—Editor Motor Age—Will Motor Age inform me what the Perfection lighting system is as advertised by Bishop, Delano & Co., 1463 Michigan avenue, Chicago? I have written this concern on two different occasions regarding it, and as yet have received no reply. The Dover Stamping and Mfg. Co., Cambridge, Mass., through the advertising pages of Motor Age, issues November 11 or 18, or thereabouts, offered $50 as a premium for a name for its new funnel. Has this company named the funnel yet? I would also like to know what patents there are on air-cooling, two-cycle engines for motor cars.—John E. Curtis.

Bishop, Delano & Co. undoubtedly have gone out of business, at least as far as their operations in Chicago are concerned. The Perfection lighting system as advertised in Motor Age was an electric system for motor cars in which the current for the light was generated by a dynamo operated by the motor of the car. The Dover Stamping and Mfg. Co. has named its funnel the Saval. The way to learn what patents there are on air-cooling two-cycle engines is to search, or have searched, the patent records on file in the libraries of the large cities; or to engage the services of a reputable patent attorney who, for a reasonable sum, will have his agent in Washington search the records of that city.

MAGNETO WEAKNESSES

Hartwell, Ohio.—Editor Motor Age—Will Motor Age through the Readers' Clearing House answer the following: 1—What are the weakest points about a magneto; that is, parts which are most apt to break down, and what are their remedies? 2—Which is the best way of towing a car—with differential locked by breaking of gears or otherwise? 3—What point of opening of exhaust valves does Motor Age consider best for power on low speeds as well as speed on high—40 degrees ahead and 15 after exhaust stroke? 4—Which is the best way of finding a missing cylinder, when a high-tension magneto is used, also when a low-tension is used?—Subscriber.

1—Every type of magneto has its characteristic weaknesses. That is, they all have features which, under some conditions, are liable to get out of order or adjustment, and give trouble. These troubles generally consist of loose connections, worn or ill-adjusted platinum points, cams or cam-contact surfaces, worn brushes, etc. Their remedies are proper adjustment or replacement of worn parts.

2—It all depends on the construction of the rear-axle. If of the full-floating type, the best way is to remove the shafts which connect the wheels to the differential mechanism. If of the semi-floating type, it is sometimes possible to remove the bevel-gear and differential from the rear-axle housing without removing the lateral driving shafts. At any rate, it is necessary to free the differential, either by disconnecting it entirely from the wheels or by removing the cause of the lock. If it is not possible disconnect the differential from the wheels, try to remove the broken gear teeth or whatever the cause may be. A car may be towed straight with a locked differential but much damage may be done if an effort is made to make a turn.

3—The best point of valve opening depends upon the design of the motor. The Thomas cars open the exhaust valves of their engines 40 degrees early and close 5 degrees late, and in most types of slow-speed motors the exhaust valves open earlier than 40 degrees and close nearer center than 15 degrees late.

4—The best way to locate a missing cylinder, regardless of the type of ignition employed, is to short-circuit the spark-plugs one at a time with a screw driver, until you come to the plug which, when short-circuited, does not affect the action of the motor. This, of course, only applies when the missing is regular on one cylinder and caused by faulty ignition.

ROTARY VALVE ENGINE

Astoria, Ore.—Editor Motor Age—In looking through the Readers' Clearing House columns of the issue of Dec. 9, I notice a sketch of a rotary valve gas engine, so take the liberty of asking if there is such an engine built, embodying the principles there illustrated? If so, by who, and where? If not, does anyone hold a patent on the principle? What is wrong with that scheme, if anything? It strikes me that, unless the braking effect of that style valve is so great that it would take more power to drive it than the present type of poppet valves, especially on the explosion stroke, it would immensely simplify both the building and the operation of the engine. It should be absolutely self-grinding.—H. W. Cyrus.

The sketch above referred to was simply given to illustrate the principal of the rotary valve. Motor Age knows of no engine employing this type of valve, nor of any patents covering it. As to the practicability of the scheme, it remains to be tried and proven. Motor Age invites more information or criticism on the subject. The valve disk could be rendered motionless during the greater part of the power and compression strokes through the use of intermittent gearings; it would therefore be unnecessary to operate it under great pressure. Lubrication might be difficult, but this too might be easily worked out by an expert.

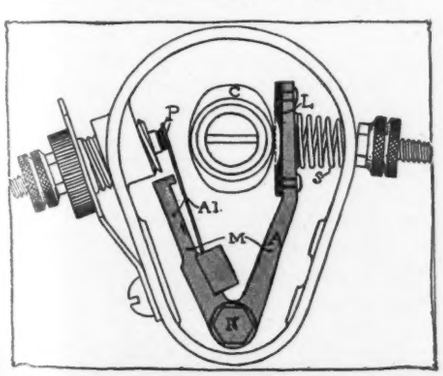


FIG. 1—CIRCUIT-BREAKER OF REMY MAGNETO

DESCRIBES DIESEL MOTORS

Clinton, Ia.—Editor Motor Age—Will Motor Age tell me where I can procure information regarding pump-fed gasoline motors? I have reference to motors working on the Diesel cycle in which pure air is compressed in the cylinder and gasoline or kerosene injected into the compression space at time of ignition. What form of injection apparatus is used and how is the quantity of gasoline controlled? In controlling the speed of the motor is the air inlet as well as the quantity of gasoline regulated?—L. P. S.

The general arrangement of the valves and fuel injection apparatus of the Diesel motor, as illustrated in Edward Butler's book on "Carbureters, Vaporizers and Distributing Valves," is shown in Fig. 2. The cylinder C has very little clearance between the top of the piston F and the bottom of the combustion chamber B at the end of the compression stroke, at which moment the injection valve operated by the lever J will be opened, to permit the injection of a charge of fuel forced during about 20 degrees of the crank revolution from the supply pipe P assisted by an atomizing charge of super-compressed air through the pipe D. The cage containing the injection valve is water-jacketed, water entering and leaving by pipes W and W. The operation of the air admission valve A and the exhaust valve E is mechanically controlled in a conventional manner. The movement of the fuel-admission valve is very slight, giving a narrow annular opening for the entry of the oil. Surrounding the valve-spindle are a series of brass washers perforated parallel to the spindle by numerous small holes. The oil is pumped into the space around the valve-spindle near its middle, and by capillary action finds its way between the washers and into the perforations. The air for fuel injection is admitted behind the oil; and because of its high pressure, blows the oil into the cylinder when the valve opens. The amount of oil admitted is regulated by the governor, which controls the time of opening of a by-pass connecting the discharge and suction sides of the oil-pump. At light loads the oil is pumped to the fuel valve for part only of the admission period, and air alone will enter past the valve for the rest of the period.

WINDSHIELD TROUBLE

Freeport, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me what material can be used to hold the glass in the brass frame of my windshield. The glass in this shield was set in felt and seems to have worked out. Kindly advise me how to remedy the rattling and, if necessary to set in rubber, shall I send it to the manufacturer and how long will it take to do this work.—K. F. Snyder.

Felt seems to be the best material for your purpose; rubber is unsuitable, as it is claimed it dries up and becomes hard, thereby defeating its object. If convenient, it would be advisable to send it to the manufacturer and have it reset in new felt. The actual labor on a job of this kind, which necessitates the taking apart of the frame, removing the glass, pasting in new strips of felt with fish-glue and reassembling, will take but a few hours. It would be well to consult the manufacturer, and if he is too far distant it might be cheaper to have the work done by one of the carriage companies in Chicago or other nearby city.

POWER OF MUNICIPALITIES

Chicago—Editor Motor Age—If commanded by an officer of the law, would a motorist be compelled to take him aboard to pursue another car violating the speed ordinances, or containing a criminal fleeing from justice? If so and an accident occurred while the officer is in such machine, would the owner or municipality be liable for damages caused by such accident? Have any such cases been decided in Illinois?—E. S. V.

Here is the answer to the question as given by Howard W. Hayes, assistant corporation counsel of the city of Chicago:

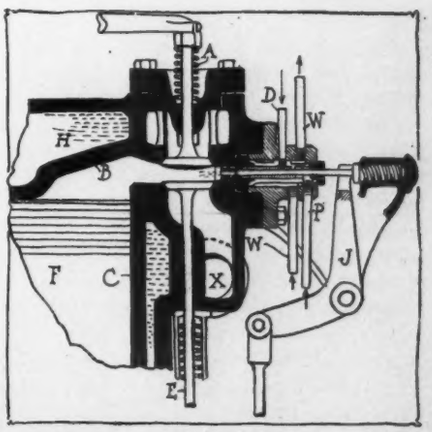
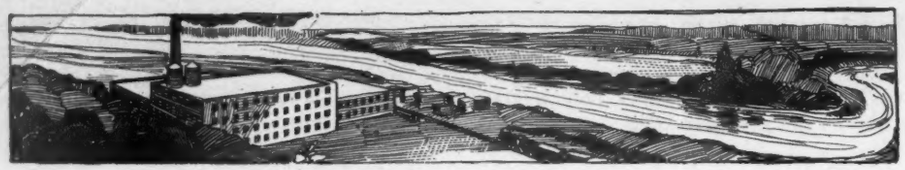


FIG. 2—VALVE ARRANGEMENT OF DIESEL MOTOR



"By virtue of section 341 of the criminal code of the state of Illinois, 'every male person above the age of 18 when commanded by an officer to assist in arresting and securing an offender shall obey such command.' Although I can at this time find no reported case discussing the question as to whether or not a police officer can impress a motor car or other vehicle in charge of a person directed by him to assist in making an arrest, yet under the general police power, often termed the law of overruling necessity, I believe it to be beyond dispute that an officer can require a motorist to take him aboard and pursue another car occupied by an offender of the law.

"If under the law the services of the individual must be given at the command of an officer, certainly the means by which his services may become effective must also be tendered, for freedom of individual action always has been more securely safeguarded than have property rights.

"One carrying out the command of a police officer is clothed with all the immunities enjoyed by the officer himself, and therefore if the officer is not liable in such a case—it cannot seriously be contended that he could be,—the person deputized by him is indemnified so long as he is following out the command of one clothed with official character.

"The decisions of the Illinois courts are entirely harmonious as to the question of the liability of the city for the negligent acts of members of the police department. The municipality cannot be held liable for the acts of any of its employes who are charged with carrying out the governmental functions vested in the city. I know of no reported case involving the same facts as those set forth in the question above propounded, but I am informed that a judge of the municipal court has lately expressed a view which is contrary to the position taken by the writer."

PLANETARY VS. SELECTIVE

Starr, S. C.—Editor Motor Age—Will Motor Age through the Readers' Clearing House answer the following questions: 1—Which is considered the better for light 20-horsepower cars, planetary or selective transmissions? 2—Which will give longest wear, power and least trouble? 3—Should one become stalled in mud, races motor, then puts on low speed, it seems the planetary allows slippage, and is less liable to strip the gears than selective. Is this true?—A. E. Dean.

1—It all depends upon the design of the transmission, its adaptability to the work which the car will be called upon to perform, and the disposition of the driver. A planetary transmission, if properly designed, gives very good service, and has several advantages, but is noisy; while a selective gearset is very efficient, generally less, but sometimes equally noisy, and perhaps a trifle less easily operated. One thing in favor of the planetary transmission is that it can be more economically manufactured.

2—As for the longest wear, most power and least trouble, all depends upon the design and construction of the transmission and the conditions for which it is intended. The liability of stripping gears in the selective type of gearset under the conditions above mentioned would be greater. It is an uncommon occurrence nowadays, however. This danger would vary with the operating efficiency of the gearset and clutch mechanism, and the ability of the driver to operate them.

DRIVING INSTRUCTIONS

Chicago — Editor Motor Age—Through the Readers' Clearing House will Motor Age recommend some book on the subject of motor car driving. It is my desire to become a chauffeur and I am much interested in this subject.—Harry Edwards.

Motor Age knows of no single book in which the subject of motor car driving is thoroughly covered. It is an art which cannot be readily taught from books. Many hints on the subject, however, are given in a chapter of one of the volumes of the "American Cyclopedia of the Automobile, or Motor Cars and Motoring Self-Taught," by Thomson & Thomas, Chicago.

TWO-CYCLE VS. FOUR-CYCLE

Madison, Wis.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, answer the following questions?

1—Why is the automatic spark governor not used more than it is in in motor car construction?

2—Is the left-hand control ever likely to become standardized?

3—What advantages and disadvantages does the front-wheel drive or the four-wheel drive present over the standard drive?

4—What are the disadvantages of the two-cycle, four-cylinder motor car, and why is it not built in larger numbers?—George W. Christie.

1—It is difficult to state just why the automatic spark governor is not used more at the present time. One reason is that the control on the majority of cars is with the throttle, the spark rarely being changed after starting, except on steep hills. The great tendency has been toward a fixed spark, which is naturally a cheaper proposition than a governor on the spark. In throttle control the success which is attended the accelerator in conjunction with the hand control on the steering wheel has helped to eliminate the spark governor.

2—Left-hand control is becoming very general on commercial cars, and next year will be used on more trucks. It takes time for features of this nature to become standardized, but there is a general advancement in this direction.

3—The advantages of the front-wheel drive are that greater traction is possible, and if front and rear-wheel steering is used, the car can be maneuvered in much less space. The disadvantages of front-wheel drive consist in the expensive manufacture and extra weight.

4—In a two-cycle engine you get an explosion in every cylinder each revolution of the crankshaft, whereas in a four-cycle you get an explosion in each cylinder every other revolution of the crankshaft. If you have a four-cylinder two-cycle engine you get four explosions per crankshaft revolution, whereas in a four-cylinder four-cycle motor you get two exlposions per revolution. The disadvantages of a two-cycle has been the proper exhausting or scavenging of the burnt gases and securing a full charge of fresh gases for each explosion. To do this different designs have been used, one of the latest being the differential piston on the Elmore, so that the moisture is actually pumped into each cylinder, thus making certain of a sufficient supply of mixture. It has been due to this fact that the manufacturers of two-cycle motors have not been greater in the past.

AIR-AND-GASOLINE MIXTURES

Stafford, Kan.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, tell me how many parts of air to one part of gasoline does it take to make a proper mixture?—Reader.

The proportions of gasoline and air which go to make up a proper mixture vary according to: the mechanical construction of the engine and its carbureter, the atmospheric conditions, and the specific gravity of the gasoline used. One authority gives the proportions of a mixture as, 7 to 10 parts of gasoline vapor to 100 parts of air, but for general use 15 parts of air to 1 of gasoline vapor has been considered the best to use.

ENGINE GETS HOT

Mount Ayr, Ia.—Editor Motor Age—We have a single-cylinder Reo which gets so hot that it sticks, and we are compelled to let it cool before starting again. The timing has been examined and seems to be all right, the circulation seems to be good and only sufficient gas is given to pull the car, and the spark advanced only far enough to get good results. Will Motor Age inform us what is the cause of the engine getting so hot?—Neptune-Allyn Auto Co.

Your trouble most probably is due to inefficiency of either the lubrication or

cooling systems. Perhaps the pump shaft has sheared off or the gears stripped. Examine the radiator, water-connections and water-jacket, and see if water circulates freely through them. Note if the oil feeds regularly from the oil cup over the cylinder; see that it does not leak and lubricate the outside instead of the inside of the cylinder. The character of the oil also might bear inspection. It may be too thick to flow readily, too thin to lubricate properly, or of such a poor grade that its lubricating properties are not up to the standard required. If the possible causes mentioned are found O. K., examine the carbureter, the needle valve or its seat may be damaged so that proper adjustment is impossible and the overheating is caused by an over-rich mixture. There might also be a leak in the inlet pipe or one of its connections, which makes an over-rich mixture necessary in order that the motor will run. Check up the valve timing according to the marks on the flywheel; examine the revolving cam or segment of the timer and see that it is not loose; then see that the ignition spark, when fully retarded, takes place at the plug just as the piston starts to descend on the explosion stroke.

FORT WORTH AFTER GLIDDEN

Fort Worth, Tex.—Editor Motor Age—With reference to the possibility of the Glidden tour passing through Fort Worth, would say that we have a population of about 75,000. There are at present in the neighborhood of 700 cars in this city, 18 salesrooms, 5 large garages, with about 125 people engaged in the motor business. Nearly all the dealers carry more or less complete lines of supplies in this city, and we have two fully equipped vulcanizing establishments. The possibilities of selling motor cars in the territory adjacent to Fort Worth are almost boundless, as there is such a demand for motor cars of all classes in this territory that the dealers have been entirely unable to make deliveries, and they could sell fully double the number of cars they have been getting from the factories.—A. L. Shuman.

SOME BATTERY TROUBLE

Newton, Ia.—Editor Motor Age—As most people nowadays have more or less to do with dry and wet batteries, we would ask why wet cells fail to make a real live spark even after being renewed with sal ammoniac. We use two wet cells to operate a cigar lighter and the cells, by being occasionally renewed with sal ammoniac, have given good service. But lately they have failed to produce a spark with life enough to ignite the gasoline even after just renewing them. The carbons unscrew and are filled with what seems to be coarse carbon, or some I believe call it depolarizer. One party suggested the batteries were worn out but that don't seem possible when new zincs are put in and everything looks as good as ever.—W. O. Foster & Co.

The substance with which the carbons are filled and which has the appearance of coarse carbon is black manganese dioxide, or what is commonly known to the electrical trade as depolarizer compound. It is this which most probably needs renewal. With a fresh saturated solution of sal-ammoniac, that is a solution of sal-ammoniac and water which contains as much sal-ammoniac as the water will dissolve—and with fresh carbons, fresh depolarizer, and new zincs, there is no conceivable reason why your batteries should not be in first class condition; and unless the terminal connections are poor or the wires broken, they should give as good service as when the batteries were new. The depolarizer compound required can be obtained from any large electrical supply house at a very reasonable cost.

NAPHTHA VS. GASOLINE

Atlanta, Ga.—Editor Motor Age—Will Motor Age give us all the information obtainable as to the effects of the use of naphtha in place of gasoline on an engine, whether it is good, bad, or indifferent; and if gasoline is superior, and if so in what way, and the objections one would have to the use of naphtha.—Buckeye Auto Co.

Naphtha cannot be used in place of gasoline in a gasoline motor, because of its low specific gravity. It is not volatile enough; it will not evaporate, or combine quickly enough and in convenient proportions with the air, to form a suitable combustible mixture. Naphtha might be called stale gasoline. It generally tests from 49 to 57 degrees, and gasoline suitable for an internal combustion motor should test from 61 to 90. Naphtha, or stove-gasoline, is generally used for cleaning purposes and for use in the ordinary gasoline stove.

ENGINE THAT OVERHEATS

Mt. Ayr, Ia.—Editor Motor Age—We have been very much interested in Motor Age and especially in the Readers' Clearing House columns, but as yet have never seen anything that quite suits our case. We have a two-cylinder motor that gets so hot the water boils. We have ground the valves and put in new valve springs. The engine gives all kinds of power and can climb any hill around here on high, and with the exception of its getting hot does not seem to work the engine in the least. When the engine does get hot we reduce the gasoline supply and run the spark as far advanced as possible. The timing is right, the oiler works perfectly, and the water circulates good, but still the engine gets hot, not enough to check the motor, but it seems as if the exhaust pipe would set the car afire. If we reduce the gas supply it kills the motor. We have no trouble from preignition. Can Motor Age give us any clue as to the cause of our difficulty?—Neptune-Allyn Auto Co.

An over-rich mixture seems the most plausible cause for the over-heating of your motor. Motor Age believes that if you will make a thorough examination of the intake pipe connections you will find a small leak, through which sufficient air is admitted to destroy the equilibrium of the mixture. A small leak around the gaskets or through a hole in the intake pipe will prevent a motor from running regularly at slow speed, and often cause popping in the carbureter, unless the proportion of gasoline in the mixture is abnormally increased. With the proportion of gasoline increased under such conditions, however, many motors will display exactly the same symptoms you mention. The motor will run beautifully with plenty of power, but will overheat.

It is possible that in assembling the motor, one of the intake-pipe connections was poorly made, or one of the gaskets defective. An over-rich mixture ignites and burns slowly and often with more intense heat than that for which the motor is designed, consequently, while even though the maximum power of expansion takes place when the piston has descended comparatively far down on the explosion stroke, there is no apparent loss of power; but owing to the late start and slow combustion of such a mixture, it is forced out into the exhaust pipe on the exhaust stroke, while still burning with intense heat; this causes the excessive heating of the exhaust pipe. Under normal conditions, the most intense heat of the combustion which takes place in the cylinder of a motor should not come in contact with the lubricated friction surface of the cylinder wall; and when the explosion takes place when the piston is far down on the explosion stroke, the lubricant is burned or rendered less efficient, so that these surfaces are not only called upon to absorb the intense heat of the explosion, but also that produced by friction caused by the inefficiency of the lubricant. Look for the hole in the intake pipe; plug up the ends and apply air pressure, if convenient. If there is no leak, examine the carbureter closely; it may be damaged so that it cannot be properly adjusted.

MORE LEFT-HAND CONTROLS

Port Townsend, Wash.—Editor Motor Age—In Motor Age, issue April 14, page 18, appeared a partial list of cars using left-hand control. To this list kindly add the Krit and the Firestone-Columbus.—Reader.

The Owen car, manufactured by the Owen Motor Car Co., Detroit, Mich., a recent addition to the motor car field, also uses left-hand control.

TESTING METHODS USED AT RAMBLER PLANT

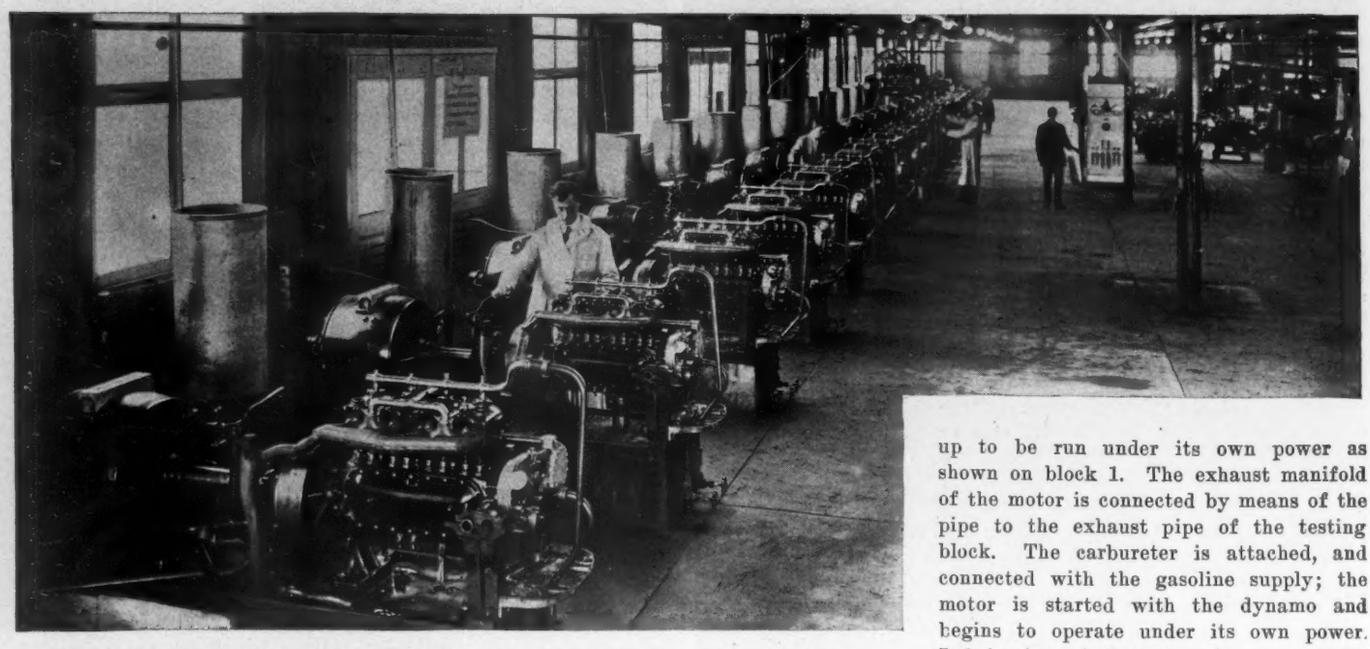


FIG. 1—SEVENTEEN TESTING BLOCKS AND INDICATOR BOARD HALF-WAY DOWN AT RIGHT

IN the illustrations accompanying this article are shown several views taken in the testing department of Thomas B. Jeffery & Co.'s factory at Kenosha, Wis. This division of the Rambler plant is one of the most completely equipped and systematically arranged departments of its kind in the world. It not only provides most unusual and original facilities for lapping the pistons into the cylinders, for limbering up and testing each individual motor and chassis complete, and detecting any possible errors or irregularities in construction, but the whole outfit is so cleverly arranged with a view to conservation of energy, fuel and oil, that the upkeep cost of the department is remarkably low for the efficiency obtained.

The arrangement of the motor testing blocks is shown in Fig. 1. Seventeen dynamos are here arranged on seventeen concrete testing blocks, each block making a complete unit, with necessary cooling apparatus and means to supply fuel and oil, and carry off the exhaust gases.

When the assembly of a motor is completed it is conducted from the assembling room to the testing department on an overhead track. As it enters the testing room it must pass the office where the number of the motor and its magneto, and the time of its entry, are registered on a special card. This card is filed, and the motor is passed on into a reserve position where it rests until a vacant place is found for it on one of the testing blocks. It then is taken up and conducted over another overhead track and lowered into position on the testing block as shown in Fig. 2. When in place on the block, it is connected up to permanent water connections in front, and to the dynamo at the rear end of the stand as illustrated.

The carbureter is removed, an oil-tight pipe connection, block 2, is made between the openings of the exhaust and inlet manifolds, about a pint of oil is introduced into the cylinders, and with the dynamo acting as a motor and furnishing the power, the motor is run in or limbered up, so to speak, for about 4 hours. The connection between the inlet and exhaust manifolds and the oil in the cylinders is then removed and the motor is connected

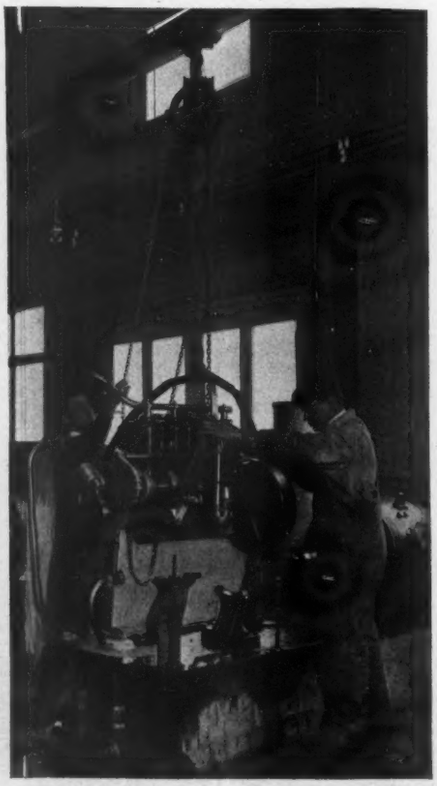


FIG. 2—PLACING MOTOR ON TESTING-BLOCK

up to be run under its own power as shown on block 1. The exhaust manifold of the motor is connected by means of the pipe to the exhaust pipe of the testing block. The carbureter is attached, and connected with the gasoline supply; the motor is started with the dynamo and begins to operate under its own power. Lubrication of the motor is now secured by means of oil contained in the fuel. After a motor has been running for 4 hours under its own power, by the manipulation of a few switches, it is individually connected to a large indicator board, Fig. 1, where readings can be taken which enable the operator to know whether or not the power it is developing is up to a fitting standard. At several intervals during this later period the action of the motor is carefully observed by expert testers in order to detect any irregularities in the way of knocks or noises. Blackboards are placed at regular intervals opposite the testing blocks, and close records of the performances of each motor, are kept thereon as long as they are under test. When a motor is pronounced O. K. by the expert of this department, it again passes the office where its card is taken from the files, a record of any unusual performances and its time on the block is inscribed thereon; then it passes on to the chassis assembling department. No motor leaves the testing department until its operation is up to a fitting standard.

A most interesting feature is the economy exercised, in preventing the loss of energy generated by the motors while running under their own power, and conserving the waste of lubricating oil. While one motor is running under its own power, the dynamo connected to it is generating the electricity for the dynamo on the next testing block, which is acting as a motor and running in the motor attached to it. The current generated while the motors are running under their own power is generally in excess of that consumed by the dynamos in limbering them up, and this excess current is stored up in a bank of ignition storage batteries, which is floated in on the line, and so arranged and cared for that: the efficieney of the batteries

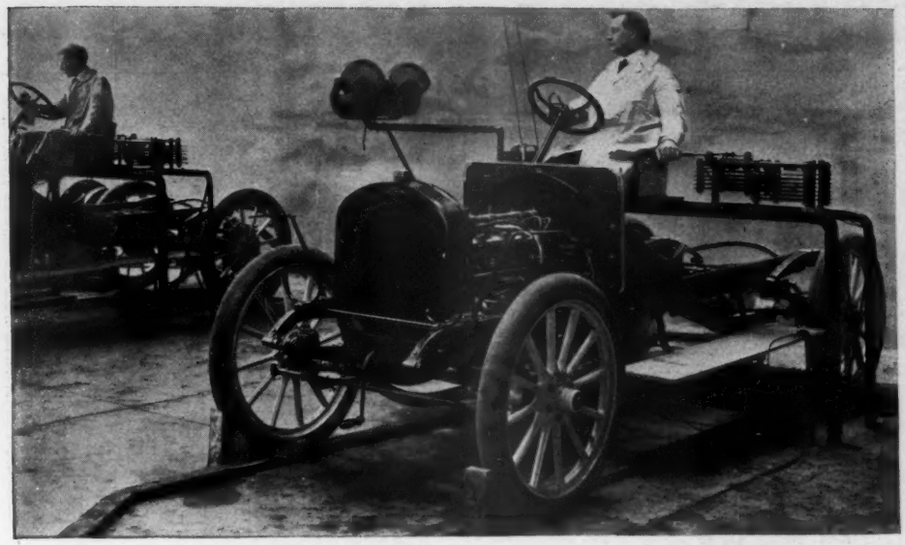


FIG. 3—TESTING THE EFFICIENCY OF TRANSMISSIONS AND REAR AXLES

themselves is increased; they supply the current for lighting the department and for the power required in lapping in pistons and cylinders. A booster or balancing machine, comprised of two electric motors is arranged at the far end of the testing blocks to take care of the fluctuations in the current generated or consumed by the blocks. As for saving the oil which drains from the motor after it has been run in, it is sufficient to say that it is caught in the pan, formed by the design of the upper surface of the block, and conducted to a catch-basin about half way down the row of blocks, from which it is taken, refined, filtered and used again.

After a motor is assembled in a chassis and the chassis assembly complete, it comes into the department and a rear-wheel test is taken. The car is securely clamped down with the rear wheels resting on immense rollers from which a dynamo is driven by means of a chain. The power delivered is determined from indicators connected to the dynamo. These indicators, as illustrated in Fig 3, are so arranged as to be readily inspected by the tester, and enable him to detect any discrepancy in power caused by possible errors in the assembly or undue friction in the transmission or rear axle. The tester's seat is carried on a frame work of angle iron which is permanently secured to the floor. This frame also carries at the left of the driver's seat a resistance grid and controller for regulating the load on the rear wheels. After a car has satisfactorily passed through this test, a seat is fitted to the chassis and it is sent out on the track for a regular road test.

In addition to the seventeen blocks shown in Fig. 1 there is another shown in Fig. 5 which is used for experimental purposes. This block is more elaborately equipped than the others and contains a number of unique and original features. At the right in this photograph is shown a solid concrete pedestal on which is mounted a manograph, a device for indicating and registering on a diagram the pressure in the cylinder of the motor throughout the cycle of its operations.

This manograph has a photographic attachment by means of which the operator may at any time take a photograph of the card produced, and the card taken by this instrument, like many other of its advantageous features, is by no means lacking in originality. A photograph of one of the cards taken on this machine is shown in Fig. 4, each of the lines radiating from the center of the card and cutting the lines of the diagram representing 15 degrees. The vertical line L indicates the centers of the motor; the section of the diagram extending from A on the vertical line to B represents the explosion stroke; from B to C the exhaust stroke; from C to D the intake stroke; and from D to A the compression stroke. The advantage of this type of diagram lies in the fact that it more clearly indicates the conditions which exist in the motor at the end of each stroke, than the conventional type of diagram most commonly used for this purpose.

The credit for this invention, as well as the skillful arrangement of these facilities for so economically and efficiently carrying on scientific investigations relative to the operation of the internal combustion motor, belongs to Frederick Purdy, whose duty it is to bring the product of the Rambler factory to its highest possible state of mechanical efficiency.

U. S. M. C. INVADING DETROIT

New York, April 27—Special telegram—It is announced that the United States Motor Co. will commence the building of a large commercial vehicle plant at Detroit within 2 weeks. A building large enough to turn out 4,000 light delivery wagons during 1911 is contemplated. The main building will be 1,000 by 150 feet and will be supplemented by several others, including a drop forge plant and a foundry. The project will not interfere with the Alden Sampson factory, which will be operated as the heavy duty department of the commercial vehicle division.

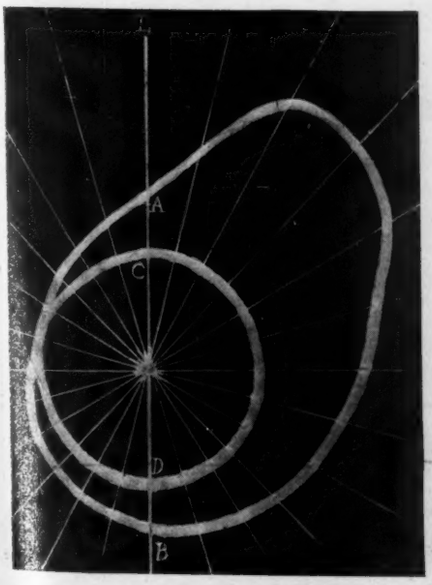


FIG. 4—NEW INDICATOR DIAGRAM

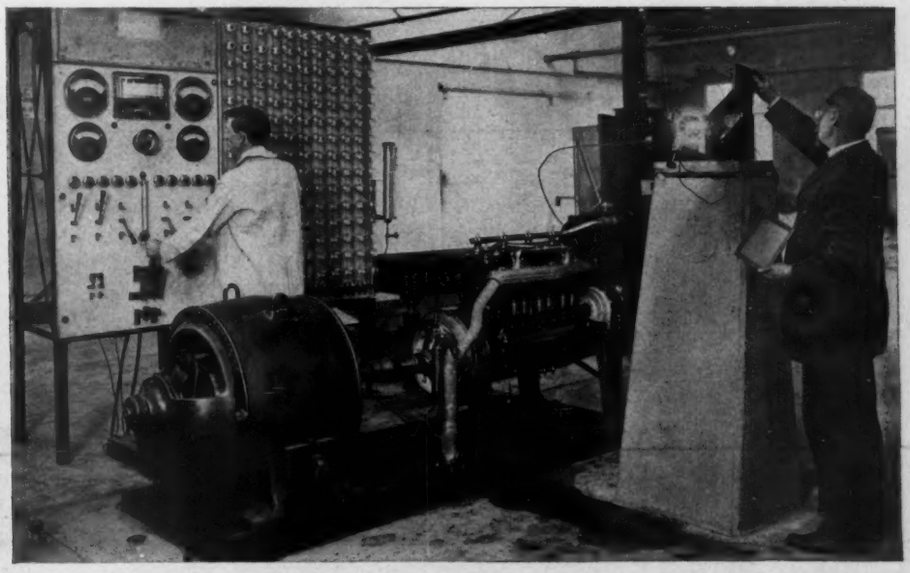


FIG. 5—EXPERIMENTAL TEST BLOCK SHOWING MANOGRAPH AND INDICATOR BOARD

RESULTS PRODUCED BY FOREIGN DESIGNERS

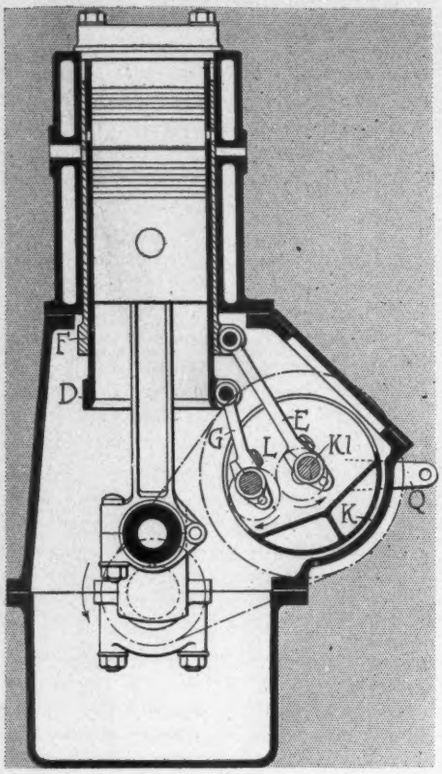


FIG. 1—KNIGHT'S IMPROVED MOTOR

KNIGHT ENGINE IMPROVEMENTS

F. W. LANCHESTER, who designed the Lanchester car, an English machine, is looked upon as quite one of the engineering geniuses of the age. He recently was appointed consulting engineer to the Daimler Co., Coventry, Eng., and has lost no time in getting to work on the Knight engine, for which he has a profound respect and of which he entertains hopes for a great future. His latest improvement is to provide a means for giving the concentric sleeves a varying cut-off by altering the travel of the sleeves, and thus allowing the engine to adapt itself to the load it has to work under.

Under certain circumstances, for instance when the engine is running light and at high speed, the valves require to be set, for maximum fuel efficiency, in a slightly different manner than they should be when the engine is required to give its power against a high load and at a low speed. Fig. 1 illustrates this interesting and ingenious mechanism. The sleeves D and F are operated in the usual manner by connecting rods, E and G, but these, instead of being attached to eccentrics on a common half-time shaft are driven by separate eccentricshafts geared together and lying parallel with each other, and also rotate in opposite directions. One of them is driven at half camshaft speed through a silent chain. These operating shafts and pinions are carried in a cylindrical casing K in the ends of which are firmly fixed the bearings of the eccentricshaft L which operates the inner set of sleeves. The cylindrical casing is so arranged that it is concentric with the eccentricshaft K1, about the center of which it is capable of being rotated, a lug Q being provided for this purpose. A partial revolution of the casing, by altering the relative positions of the parallel eccentricshafts in relation to the sleeves, has the effect of varying the travel of the latter and the periods of opening and closing of the valves is thus controllable. The whole arrangement may be operated by hand and by a governor, thus doing away with the necessity of a throttle valve.

The advent of the Knight slide-valve engine and the triumphant way in which it refuted the critics resulted in a host of engines being built upon lines as close to those of the Knight as the patent laws would permit. Generally speaking these imitations, or, rather, counterblasts—for ordinary piston valves and rotary valves in the manner of steam practice have found a lot of adherents—have not been any too successful, although one or two, notably the Hewitt and the Cooper, which were shown at Olympia last November, have proved themselves all that was claimed for them. The latest engine probably was suggested by the Knight valve-action, but in no sense can it be said to be an imitation, and it is worthy of note that before any particulars of it were made public it had been subjected to severe tests, through which it has come unscathed. Fig. 2 illustrates the method of working of the engine which has been produced by the Technical Products Co., of England. In each pair of cylinders—one cylinder or any number can, of course, be used—the crankshaft carries, between its two throws, a bevel gear G which drives a horizontal pinion P. Mounted on the top of the vertical shaft carrying this pinion is a pinion P1 which engages with a gear

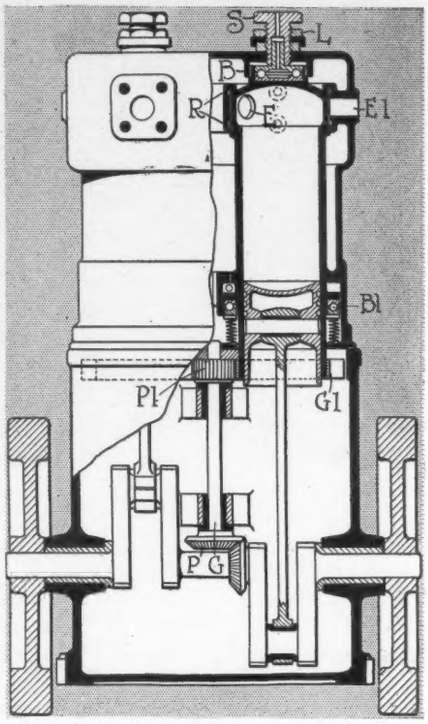


FIG. 2—TECHNICAL PRODUCTS MOTOR

G1 fixed to the foot of the cylinder liners, which are rotatable, the gear ratio being one to four. The cylinder heads which are formed in one with the cylinder barrels have ports E cut in their peripheries, which register at the proper time with similar ports E1 passing through the surrounding waterjackets. The outside of the combustion heads are turned taper so that they make a watertight joint with the female taper of the port casting, into which are let two packing rings R. Each combustion head is provided with two ports opposite each other, as shown in the plan view Fig. 3, while the outer port casting, embodying the waterjacket has

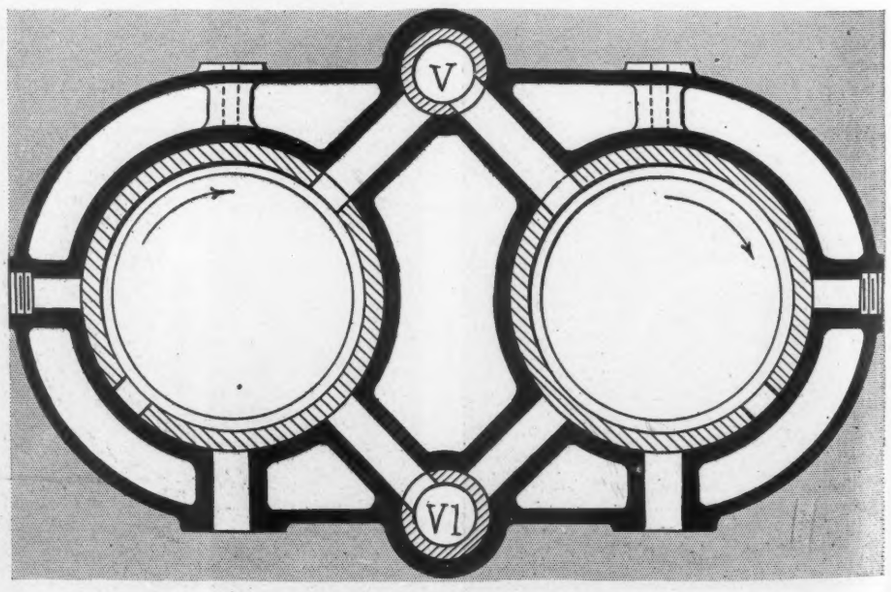


FIG. 3—TOP VIEW OF TECHNICAL PRODUCTS MOTOR

three ports, one inlet and two exhausts. It will be realized that these ports can be set in relation to one another and afterward timed in relation to the piston rods to obtain the greatest efficiency in running. Both inlet and exhaust passages are free and unobstructed, and, as in the Knight engine, there is no wire-drawing of the gases as the opening and closing of the valves is fairly abrupt. The double exhaust also is a considerable advantage, the ports opening one after the other. The spark plug is so placed in the outer casting that it registers with one of the cylinder-barrel ports when the other is closed. In the drawing the ports are shown circular, but in practice they are rectangular and so long that the ignition can easily be advanced and retarded within reasonable limits.

The rotating cylinders are held in ball-bearings B and B1 top and bottom, those at the bottom are spring-loaded so that the tapers on the cylinders and those on the port castings are thrust together, while further this thrust can be adjusted to the required pressure for easy and efficient running by a screw S and lock L nut which is applied to the upper ball-race. Immediately above the lower ball-bearings are radial plain bearings which serve to steady the cylinder-barrels in rotation. All the bearings, including the taper, are fed by position pump with oil at sufficient pressure positive pump with oil at sufficient pressure to prevent water finding its way in from the jackets.

TAXICAB SIGNAL BOX

Two inventors—residents of London, C. O'Neill Crowley and H. A. Lamb—have invented and brought out an interesting device for signaling on taxicabs, Figs. 5 and 6. It is called a traffic indicator and is supposed to be carried on the rear of the car where it can be seen by drivers in the rear. For night purposes an illumination is furnished. This indicator is controlled by a small lever by the driver's seat and gives such signals as "stop," "start," and arrows to indicate turning right or left. This device is intended to prevent signaling with the arm or hand, which is a somewhat difficult proposition at best.

FIG. 5—TAXICAB SIGNAL BOX

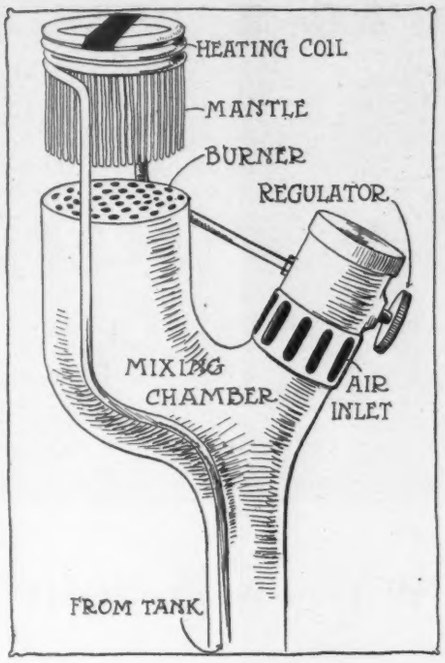


FIG. 4—THE GASOLINE LAMP

Underneath the indicator is a gong which gives the signal at the same time the signal is shown on the dial of the indicator. The signal mechanisms are controlled by Bowden wire from the seat.

NEW GASOLINE HEADLAMP

It will be remembered that a year or 2 ago a headlamp employing an incandescent mantle and burning gasoline as a fuel made its way into the British market, but the many faults in the system soon brought the firm concerned to grief. Since that date several concerns have been experimenting in the direction of gasoline headlamps, but only one appears to have satisfactorily solved the problem. This firm is the British and Colonial Lighting Co., of Tottenham, London, W., and it has now placed upon the market a lamp which has successfully survived the tests which time and a number of critics have imposed upon it. In outward appearance the new lamp is indistinguishable from the ordinary acetylene or electric lamp, having the usual body, lenses and mirror; the acetylene generating outfit, however, which may be either separate or contained in the lamp itself, has given place to a small gasoline tank holding about ½ gallon of ordinary gasoline. From this reservoir gasoline is supplied under a pressure of about 20 pounds per square inch to a special form of Bunsen burner through a fine hard-drawn copper tube, part of which is formed into a heating coil above the burner, where it is mixed with air. The latter is admitted through an adjustable sleeve by means of which the mixture can be very accurately adjusted. When the proportions of vapor and air have been correctly arrived at the resulting flame is quite non-luminous and gives an intense heat.

The incandescent mantle used is quite a different thing from the ordinary domestic article. It consists of a ring from which are suspended some thirty needles about 1¼ inch long formed of rare salts. The diameter of the mantle is about 1 inch and it is held with the needles downward in a cup directly over the burner. These mantles are wonderfully strong and have remarkable lasting power, but should they meet with mishap it is satisfactory to note that replacements are extremely cheap. Short of external damage, there is no possibility of any other part of the system giving way.

A diagrammatic view of the principle of the lamp is shown in Fig. 4. The chief recommendations of the new lamp are its low initial cost and its surprisingly economical use of fuel. Two burners giving 50 candlepower continuously for 20 hours consume in that time ½ gallon of gasoline, so that the cost of light is quite insignificant compared with that for an electric or acetylene installation. In this there is no disagreeable smell and the system requires a minimum of cleaning for the containing vessels. The light can be turned up or down as required by circumstances and no adjustments are required beyond the initial setting of the vapor and air admission ports. In this the advantages are that the light cannot fail in cold weather through the generator freezing up, which would be a disagreeable feature.

In order to start the lamp going the small hand pump attached to the spirit vessel is worked until a pressure of 20 pounds is secured. A safety valve blows off at that figure. A small hand torch is then applied for a moment or two to the heating coil above the burner; then, as soon as the gasoline vaporizes a light is applied and the lamp gives light as long as required. Any type of lamp may be adopted to use the Simpitrol burners, as the system is called, and the use of the mantle brings a unique incidental advantage along with it. The mantle has a solid top which cuts off the rays of light which are generally wasted in space and prevents the beam illuminating anything much more than about 3 feet from the ground ahead of the motor car.

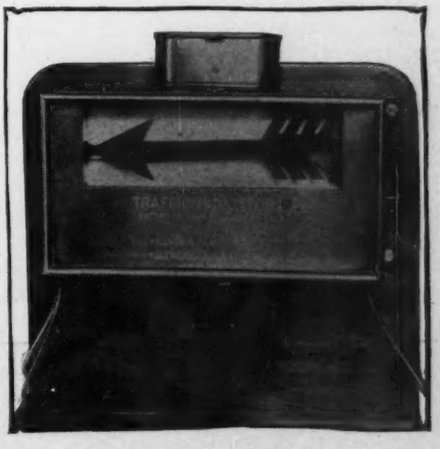


FIG. 6—TAXICAB SIGNAL BOX

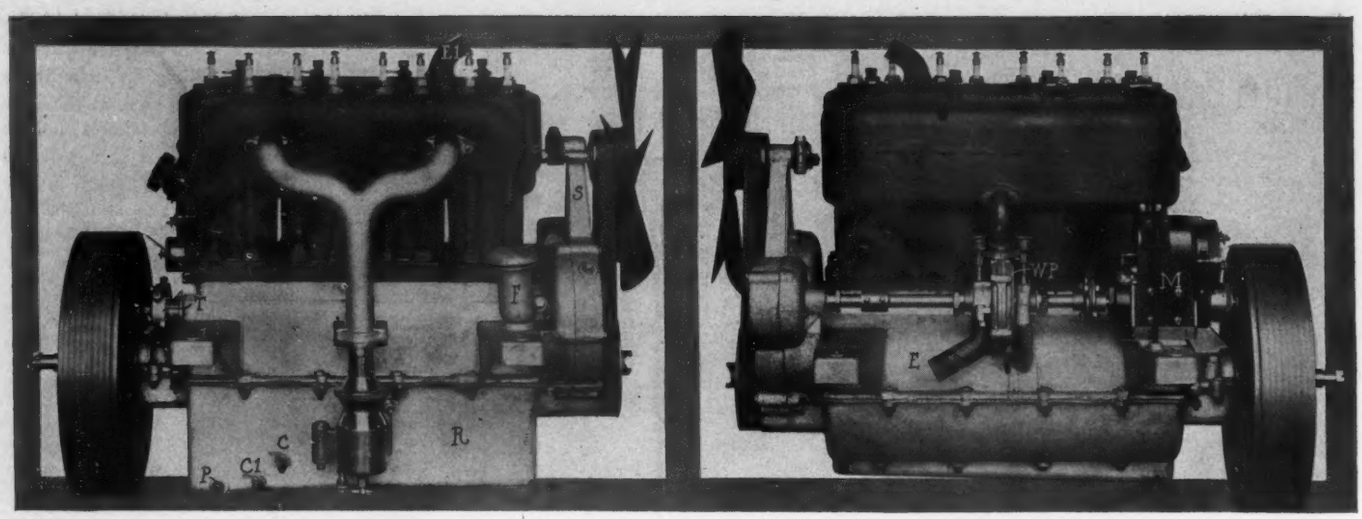


FIG. 1—VALVE SIDE OF WARREN-DETROIT

FIG. 2—MAGNETO SIDE OF WARREN-DETROIT

Warren-Detroit Chassis Design

ONE of the new Detroit cars, which is in its first year before the American public, is the Warren-Detroit, built by the Warren Motor Car Co., Detroit, Mich., the car taking its name from Homer Warren, president of the company, and also from the city in which it is manufactured. The Warren-Detroit must be classed in the low-priced field, selling as it does little above the $1,000 mark. It is a four-cylinder design employing an en bloc motor, selective gearset, shaft-drive and is manufactured in three-passenger roadster, demi-tonneau, and two-passenger speed car body styles. The two-passenger speed car carries a cylindrical gasoline tank mounted transversely on the deck back of the front seat and surrounding the remainder of the deck is a low iron railing. The chassis details on all three models are alike, some of the leading measurements being 110-inch wheelbase, 32 by 3½-inch tires all around, and full lamp equipment.

Details of the Warren-Detroit motor, which appear in Figs. 1 and 2, show it to be a typical en bloc style, the cylinder casting of L design carrying both sets of valves on the right side as Fig. 1 shows. The motor is not a long-stroke type, although the tendency of the company is well shown in this regard, the stroke being 4½ inches in length as compared with a 4-inch bore. This motor has a formula rating of 25.6 horsepower. As illustrated in Fig. 1, the crankcase is in halves divided horizontally in the plane of the two crankshaft bearings, the upper half incorporating with it one-half the housing for the timing gears, whereas the removable portion of the timing gear covering has formed integrally with it pedestal S for supporting the fan. The lower half of the crankcase appears exceptionally deep in Fig. 1, whereas in Fig. 2 its size appears more normal. The increased size in Fig. 1 is due to the presence of a circulating oil system in which the box-like compartment R is a reservoir for containing the oil, and as Fig. 3 shows this reservoir has a plunger pump, the top of the plunger appearing at K in the form of a flat mushroom head. Against this head bears a cam on the camshaft which serves to force the pump plunger through the down stroke. The up or return stroke of the plunger is by a spring S1 which exerts its force immediately the cam passes the mushroom head K. The oil elevated by this plunger pump finds conduct through a lead L and supplies the bearing parts of the motor and eventually supplies a splash level in the four compartments 1, 2, 3, 4 of the crankcase into which the connecting rods dip. A specially high partition is used between compartments 2 and 3. When the oil in these four compartments reaches a certain level it overflows and escapes through openings F guarded by fine wire mesh, so that metal or carbon particles are removed before the oil is returned to the reservoir R. Once it reaches the reservoir R it is ready to be re-pumped to the motor. As shown in Fig. 1, drain cocks C and C1 are furnished for draining oil above given levels, and through the plug P the reservoir R can be completely drained. This is essential in motors with the circulating system in that the oil should, after being used for a given time, be drawn off and a new supply added. This supply is poured in through the funnel F, Fig. 1.

Contrary to practice used on many en bloc motors a positive circulation of water through the cylinder-jackets is used, the origin of circulation resting with the centrifugal water pump WP, Fig. 2, the water being drawn by this pump through the pipe E from the radiator base and delivered to the lowest part of the jacket. The complete top of the waterjacket is a removable plate having a curved connector E1, Fig. 1, for the return flow to the radiator. Additional cooling is furnished by a six-blade fan, eccentric adjustment of which is provided for its driving belt.

The structural details of the Warren-Detroit motor are shown to good advantage in Fig. 6, which exposes the two-bearing crankshaft with plain bearings B and B1 of Parsons white brass. The four lower connecting rod bearings, designated respectively, 1, 2, 3, 4, are of this material, whereas phosphor bronze is used in the

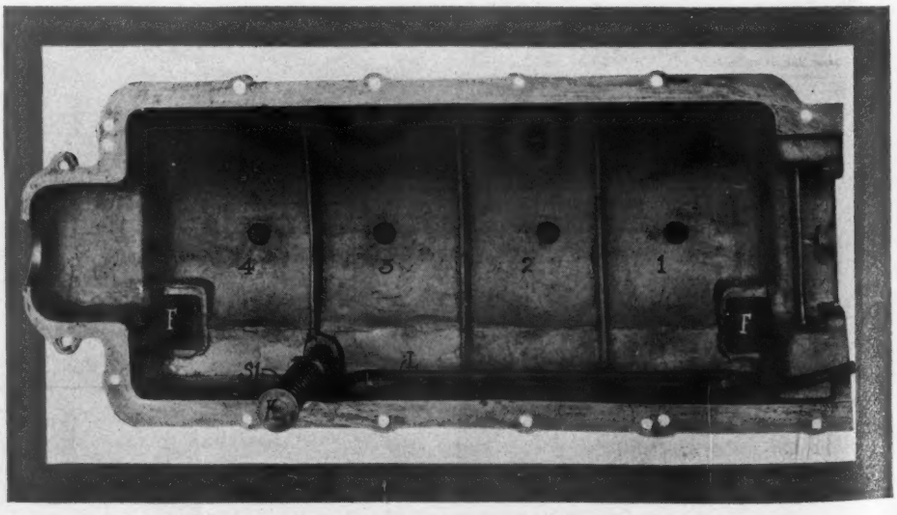


FIG. 3—OIL PUMP LOCATED IN WARREN-DETROIT CRANKCASE

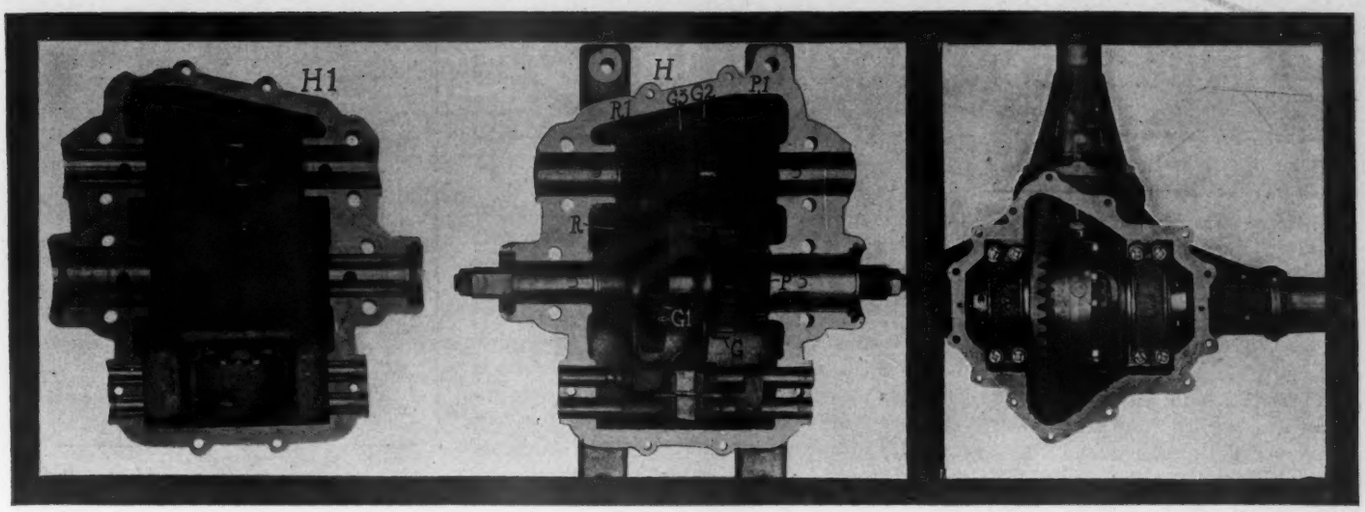


FIG. 4—SELECTIVE GEARSET USED ON WARREN-DETROIT CARS

FIG. 5—SEMI-FLOATING REAR AXLE

and Construction for This Year

upper ends of the connecting rods. The use of a two-bearing crankshaft in this motor is but one more example of the popularity of this construction for four-cylinder motors in which the four cylinders constitute a single casting. Both of the crankshaft bearings are particularly long and in conjunction with each adequate means for lubrication are provided, the oil from the lubricator being fed direct into pockets over these bearings so that it can flow through the entire bearing and overflow into the crankcase. Metal timing gears are used throughout and these operate in a bath of oil. The usual details, such as drop-forged connecting rods, ground bearings on the crankshaft, screw adjustments in the valve tappets, three-bearing camshaft with cams ground to size on the shaft, etc., are in place. The ignition system is a dual type with magneto and dry cells, hand control of the spark being furnished in each case.

In the motor flywheel is carried a conventional cone clutch with a leather facing. In rear of this is a plain bearing, selective gearset, Fig. 4, in which the complete set is exposed. In this P indicates the master pinion on the short clutchshaft, and P1 the large gear on the countershaft which is constantly in mesh with the pinion. For direct drive the gear G formed with internal teeth, is moved forward, engaging with the pinion P, thus coupling as one the clutchshaft and the mainshaft of the set. For intermediate speed the gear G is moved rearward meshing with the gear G2 on the countershaft, so that the transfer of power is from the clutchshaft through pinion P and gear P1 to the countershaft, and thence through Gears G2 and G to the mainshaft of the gearset. For low speed gears G1 and G3 are engaged. For reverse an idler gear R is interposed between the gear R1 on the countershaft and G1 on the mainshaft. This gearset is inclosed in a two-part aluminum housing which with the motor is supported on submembers of the frame. Back of the gearset power is transmitted through a propellershaft to a semi-floating rear axle. A torsion rod is employed.

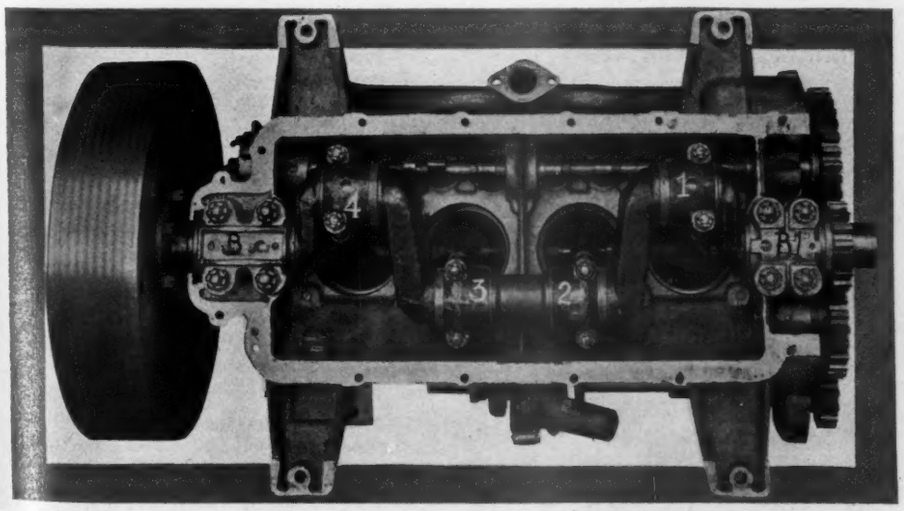


FIG. 6—TWO-BEARING CRANKSHAFT OF WARREN-DETROIT EXPOSED

The running gear of the Warren-Detroit is built around a pressed steel framework design the side members of which are dropped in advance of the rear axle to permit using three-quarter elliptic springs, these measuring 40 inches in length. This framework is supported on the front axle through a set of semi-elliptic springs 36 inches in length. This axle is an I-beam forging, with jaw ending for taking the vertical hubs of the front wheel spindles. The tie rod between the steering knuckles is located in front of the axle. Ball bearings are used in the front wheels. Both brakes operate on the rear wheel drums, the inside set operated by hand being for emergency use and the outside set under foot control and intended for general service.

MOTOR CAR LITERATURE

The McCue Co., Hartford, Conn., is mailing its catalog No. 3, which is a 50-page book consisting entirely of line drawings of the McCue chassis and parts in detail.

The 1910 Lambert friction-driven car, the product of the Buckeye Mfg. Co., Anderson, Ind., is featured and illustrated in an attractive catalog. The various parts of the car are illustrated in detail, and particular attention is given to the subject of its friction-drive system.

Napier cars, ranging from its two-cylinder 10-horsepower to six-cylinder 90-horsepower models, are described and illustrated in a catalog issued by the British Napier Motors, Boston. Illustrations of the Napier factory in London are incorporated in this catalog, and space is devoted to the Napier victories and trophies.

"Ride on Air" is the title of a 16-paged book from the Kilgore Mfg. Co., issued in the interests of its improved air shock absorber.

The advance 1910 catalog of the Houpt-Rockwell cars, manufactured by the New Departure Mfg. Co., Bristol, Conn., briefly describes and illustrates the 60-horsepower Houpt-Rockwell car in seven-passenger, toy tonneau and double-rumble runabout types.

Manufacturers' Communications

EN BLOC CYLINDERS

DETROIT, Mich.—Editor Motor Age—During the past few years the practice of making multi-cylinder castings has progressed very rapidly. En bloc is the French term and is much used because of its brevity. Multi-cylinder castings are essentially a modern construction because, until the pioneers proved they could be made successfully, the majority of the founders did not dare attempt such intricate castings as they represent. For this reason credit should be given those manufacturers who had confidence enough to bring out this construction. In Europe, Lanchester and Hotchkiss were among the first to adopt it, while in this country Thomas with a cab and Chalmers with a touring car were the pioneers. That this construction is finding great favor in America is indicated by the number of 1910 models with en bloc cylinders. Stearns, White, Hudson, Courier and Lambert have adopted this construction besides numerous lesser and newly-formed companies.

The advantages which contribute to the popularity of this type of motor are several. Of these those which appeal most directly to the user will be enumerated: Compactness, which permits of more body space, thus adding to the comfort of the passengers, and the lighter weight, thus making a livelier car. A good example of this construction is given in Fig. 1. Rigidity is increased greatly by this construction and disalignment of the cylinders becomes an impossibility; ample waterjacketing is possible and yet the length of the motor is far shorter than the same size would be with single or dual castings; fewer water pipe connections are necessary, reducing the possibility of leaks. Compare this with an individual cylinder motor in which at least eight connections are often used, giving sixteen points at which leakage may take place. Exhaust and inlet manifolds may be cast integral with the cylinders, thus eliminating many ofttime troublesome joints. The writer, however, does not approve of an integral exhaust pipe as the temperature being higher the expansion is likewise greater and distortion is bound to occur. Not 3 years ago one of the foremost American manufacturers tried integral manifolds, much to his sorrow, as the cylinders warped out of round after a short period of use.

On the other hand, the reduction in the manufacturing cost of this construction represents a decided gain in money value for the purchaser. For example, in one well-known car the four of these cylinders can be manufactured at a cost which will permit their being sold to a customer, if a replacement should be necessary, at $35. In contrast an equally well-known car with individual cylinders of the same size set the price per cylinder at $24.50, making the cost for four $98. This means that it costs about $68 less to use the en bloc type, which is unquestionably the better for a small car. Dual cylinder castings are a step in the right direction, for the four cylinders on a motor similar to those instanced above can be purchased for $45.

Up to 4¼-inch bore motors there seems to be no question as to the practicability of the en bloc type. Above this it is a question which only time and experience will tell. Large cylinders are unquestionably harder to cool than smaller ones. Thus higher temperatures may be expected. Expansion will be more noticeable, as the castings are larger and longer. Two-bearing crankshafts, which are made possible by the shortness of the en bloc construction, become too ponderous with cylinders of the larger bores. At least a three-bearing crankshaft is necessary then, which type favors paired cylinders.

Fig. 2 is a sketch of a well-known foreign motor in which three adequate plain bearings are used on the crankshaft. The particular object of the en bloc type, that is, compactness, is lost as the second and third cylinders have to be separated far enough to allow for an intermediate bearing.

It should be mentioned that Stearns builds the largest en bloc motor in this country at the present time, having a bore of 4½ inches, though even racing motors have been built en bloc with as large a bore as 6 inches. The grand prix Weigel is the one referred to. While such extremely large motors can be built for special purposes, the advisability is doubtful.—Chalmers Motor Car Co., Lee Anderson.

EXPERIMENT WITH TIRES

Kenosha, Wis.—Editor Motor Age—The longevity of tires, a most vital problem with the owner, has recently been put to severe tests by our experts. These experiments have revealed a remarkable difference in wearing qualities between tires varying only slightly in size. Many cars, equipped with 36 by 4½-inch tires, were tested against others equipped with tires 2 inches smaller in diameter and ½ inch smaller in width. The larger tires lasted just twice as long. The larger wheels, as well, showed greater power of resistance against strains, being stronger than smaller ones because of their greater weight.

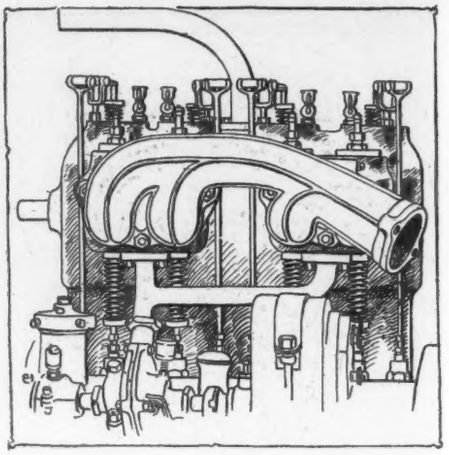


FIG. 1—EXAMPLE OF EN BLOC CYLINDERS

The marked difference between a tire of large size and a smaller tire is accounted for by the fact that smaller wheels drop into holes in the roadway, adding greatly to the wear on tires as well as to the discomfort of the occupants of the car. Big wheels and tires glide lightly over depressions, providing wider cushioning surface and thus adding to comfort as well as to tire economy.—Thomas B. Jeffery & Co.

WINTON'S ENGLISH AGENCY

London, Eng.—Editor Motor Age—Referring to the news item entitled "London Is Cosmopolitan," Motor Age, issue March 17, page 13, we would call attention to the fact that we represent Winton cars over here, the agency being in greater London.—Winton Motor Agency, Ltd.

INDIANAPOLIS GROWING

Indianapolis, Ind., April 23—In the last 18 months garages, motor car factory buildings and structures for industries allied with the motor car industry have been erected in this city at a cost of $580,875, of which $292,435 was for buildings erected last year and $288,440 for buildings erected during the first 3 months of 1910. Last year six public garages were built, costing $174,000, sixteen private garages costing $4,635 and eleven factory buildings costing $113,800. This year the city has issued permits for ten garages to cost $273,500 and for two factory buildings to cost $14,940, almost as much as the total building operations, so far as the motor car industry is concerned, of last year. At the present time the Globe Realty Co. is erecting six reinforced concrete garages in North Capitol avenue to cost $247,000, to form a part of the new $1,000,000 motor row. Other garages being erected are: Samuel E. Rauh, $11,000; William H. Lee, $5,000, and A. M. Fitch, $5,000. Permits for factory buildings issued this year have been to the Hercules Electric Co., $4,000, and the Overland Automobile Co., $10,940. More money is spent in the city for buildings for the motor car industry than for any other class of structures.

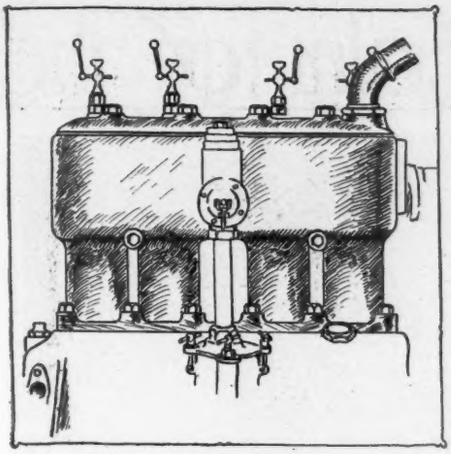


FIG. 2—FOREIGN EN BLOC IDEA

The Motorists' Bookman

THE NEW YORK-PARIS TOUR

ANTONIO SCARFOGLIO, a passenger on the Italian Zust car in the now historic New York-Paris tour, has compiled his narrations in a most interesting 400-page volume entitled "Around the World in a Motor Car." While the contestants were crossing America Scarfoglio electrified many Americans by cabled reports to Rome of his vivid descriptions of his experiences across America and his pages are replete with entrancing pen pictures of his snow campaigns, his American impressions and his Death Valley adventures. Interesting as are his American impressions to an American, those on Japan are equally so, and it is questionable if he has not treated his experiences across Siberia with a special significance, for they glow with no uncommon glamor to the American who reads of the trail across what has often been considered the great Siberian waste.

Scarfoglio has not attempted any town-to-town itinerary, as have many would-be authors who have spent a month in a motor car in Europe and it is well he has not else a mere enumeration of the places would, in a circuit of the globe, fill a volume. The real brilliant parts of the book are his impressions of the peoples seen in the trip and the lands passed through. Apparently he did not have time to transcribe his estimate of the Americans until his car reached Chicago, where he had a couple of leisure days to allow his varied conceptions to crystallize into shape.

In speaking of Americans and Chicago he says: "I spent a whole day in traversing Chicago's busy and somber streets, with nose to the wind and eyes to heaven. About Americans to us there is a very strange thing—they have developed, and it can only be seen along a rigid vertical. The horizontal does not exist and has no geometrical value for them. Their architectural spirit has the same habit as fire and smoke—it must rise and touch the sky. They have the same contempt for the ground as plants and equestrian monuments, which supported on formless bases raise their vainglorious heads to the sky as far as possible. They convey the idea of being bound to the soil by force and of wishing at every moment to detach themselves and soar still higher. The street is a consequence and not a reason. It is a resultant and not a determining cause. It exists because the houses cannot all stand together, not because it is useful. And it has neither fascination nor mirth. The streets really are used as places where things are sold. We in Italy have a civilization which has grown in strata by successive aggregations. The Americans have one which shot up from the fertile ground in a single day, like a fungus. Our progress has followed the horizontal line, theirs a decided vertical. We have a large conception of a smooth and harmonious life with varied forces and innumerable pleasures, all combining to form an organic whole from which there results a certain proportion of enjoyment. Their—the American—conception of life is naked, rigid, skeletonic, like a spear held upright. Their life is focused on one single enjoyment, intent on one conquest. They have their eyes fixed upon a far-distant point, and they cannot see anything on either side of them. We, on the other hand, are compelled by necessity to embrace the whole horizon and to enjoy everything in order that one single pleasure may result."

The book is by far the best written and most interesting description of a tour that has appeared in the last few years. It does not become prosaic because of repetition, and while a few of the author's impressions are overdrawn, the general tone is fairly close to the fact line. Mitchell Kennerley, New York, is the publisher of this book of travels.

REVIEWS ENGINEERS' PAPERS

The Incorporated Institution of Automobile Engineers of London, England, has published in book form the proceedings of the society for the session of 1908 and 1909. It is a cloth-covered volume of 600 pages and contains full text of the different papers read before the association during this time. The contents include: 1—Some problems of the motor car, by Dugald Clark. 2—The rating of gasoline engines, which is a report of a horsepower formula committee containing proposals for the suitable rating of engines. 3—The weight of motor car and motor car parts, by Mervyn O'Gorman. 4—Some chemical notes on gasoline by Horatio Ballantyne. 5—The composition of commercial gasoline, by Bertram Blount. 6—On the thermal and combustion efficiency of a four-cylinder gasoline motor, by W. Watson. 7—The transmission of power from the engine to the road wheels in motor vehicles, by L. A. Legros. 8—The mechanical and thermal efficiency of the gasoline engine, by L. G. Esmond-Morse, etc. The book also contains a very complete report of the various discussions of these different subjects.

RECORDING BUSINESS DEALS

"Accounting Every Business Man Should Know," by E. E. Garrison, and from the press of Doubleday, Page & Co., New York, is a 200-page, cloth-covered volume on the elements of recording business transactions for bookkeeping as generally known. The book is the usual dissertation on the subject, showing in every instance why a certain factor of the system was necessary, why the day book is a necessity, the reason for the ledger, the necessity of the monthly balance, and the whys and wherefores of every other detail. The book is written by one whose 20 years of application to the subject in a variety of industries has resulted in seeing and analyzing from the standpoint of one who wants to know it. The book is most valuable for the garageman, the dealer, the branch manager, or others who have not been fortunate enough to obtain a clear knowledge of business principles during their school days, and who can receive a clear insight into it through perusing the pages of this book.

OF INTEREST TO BOYS

"Harper's Machinery Book for Boys," is the title of a 372-page, cloth-covered book, 5½ by 8 size, by Joseph H. Adams, and from the press of Harper & Brothers, New York. The book, divided into three parts, incorporates in part I chapters on the principles of simple mechanics, tools, power and power transmissions; part II deals with the subject of machinery, such as metal-working, woodworking, stone and marble-working machinery; and part III pertains to the motor car, motor boats, and stationary gas engines. The chapter on motor cars analyses the gas engine, the component parts of a motor, the chassis, the ignition, and the carbureter. The book throughout is profusely illustrated with working drawings so that the small boy handy with tools and interested in machinery can readily understand the elementary principles of the machinist's art, and learn how to make parts of machinery. The two last chapters of the book are devoted to formulæ and tables, and a glossary of technical terms explains in simple language the meaning of many of the tools employed in machinery work. A young chap anxious to learn motor mechanics can profit by a study of this interesting book.

In the Realm of the

Novel Motor Vehicle

W. G. WAGENHALS, a mechanical engineer in St. Louis, has designed and had built a motor delivery wagon which almost produced a sensation when it appeared this week upon the streets of the city. The car is designed to meet the rapidly growing demand for a light delivery motor vehicle that would not cost as much as a good horse and wagon. The motor is a two-cylinder four-cycle opposed water-cooled and of 14 horsepower, with two-speed transmission and chain drive. With only three wheels, and driving with the single rear wheel, the mechanism is greatly simplified, this being the only motor vehicle with a carrying capacity of over 500 pounds not using a differential. It is declared that this design offers all the advantages of a four-wheeler without the necessary complications and is much more cheaply maintained. In addition it saves one tire. Mr. Wagenhals says he will have his car on the market within a short time.

THREE-WHEELED MOTOR DELIVERY WAGON BUILT BY ST. LOUIS ENGINEER

DETAILS OF ABRESCH TRUCK

The Abresch trucks manufactured by the Abresch-Cramer Auto Truck Co., Milwaukee, Wis., are equipped with a standard type of Wisconsin motor, which is of the four-cylinder, four-cycle, water-cooled design; has a cone clutch, a Cotta individual-clutch gearset in unit with the differential mechanism, side-chain drive to the rear wheels, and the wheels are 36 inches in diameter in front and 42 inches in the rear. These trucks are made in two sizes, one having a load capacity of 1½ ton, the other 2 tons. They are both similar in construction, except for the increased dimensions of the heavier type. The 1½-ton truck is designated model A and the 2-ton model B. Model A has a 28.9-horsepower motor with a bore and stroke of 4¼ and 5 inches respectively, a 120-inch wheelbase, 3-inch front and 4-inch rear solid rubber tires, elliptic front springs measuring 38 by 2¼ inches and ¾ platform rear springs 44 by 2¼ with a 38 by 2¼-inch cross spring. Model B has a 36-horsepower motor, with a bore of 4¾ inches and stroke of 5½ inches; the wheelbase is the same, but the tires are 4 inches in front and 5 in the rear, and the springs are 2½ inches wide. Any style of body is fitted to order. The seat is located with the same relation to the motor as in a touring car. Control is through an inclined steering column carrying spark and throttle levers under the hand wheel.

HELPS TAXICAB COMPANIES

The committee on judiciary of the Massachusetts legislature has acted favorably upon the petition of the taxicab companies operating in Boston and a bill has been reported to amend the law so that users of cabs cannot escape without paying a fare, the supreme court having decided that it was not illegal for anyone to do that. The bill undoubtedly will pass during the present session and will become operative at once, which will be some time next month.

BUS LINES IN MICHIGAN

There are now three lines of motor buses in active operation in the neighborhood of Detroit and several more are in prospect, most of which run on a regular schedule, connecting either with railroads or electric lines, and communicating with places in the interior which none of the regular lines of communication are able to reach. The lines at present operate only in the summer months but are such a convenience that the farmers who use them liberally, are already enlisted in the cam-

A FLEET OF DE DION TAXICABS AND A DE DION OMNIBUS IN SERVICE IN NEW YORK CITY

Commercial Car

REAR VIEW OF THREE-WHEELER MADE BY W. G. WAGENHALS

paign of road improvement. Several manufacturers are interested in the lines and a type of car particularly for the purpose is being designed.

MAY MOVE TO BEAVER DAM

The Minneapolis Motor and Truck Co., of Minneapolis, Minn., is negotiating with business men at Beaver Dam, Wis., a stove and foundry center, for the purchase of the cotton mill property and move its plant. The concern produces motor trucks from 1 to 6 tons capacity. The company asks that Beaver Dam capital invest in stock to the amount of $30,000 to $50,000.

PROVES A MONEY MAKER

A motor car is to displace seven stages and twenty-one horses for carrying passengers and mail between Boring and Rhododendron Inn on the road to Mount Hood, in Oregon. A 42-horsepower Franklin touring car has been secured for the work by Emmett Donahue, who holds the mail contract. The last 10 miles of this run to Government Camp are up rough mountain roads which rise 2,500 feet. The grade is heavy with sand and is said to be one of the worst in the United States. A Franklin climbed to the top for the record, making the 58 miles from Portland in 3 hours flat. Donahue will make two daily round trips between Boring, a town about 20 miles from Portland, where he will connect with an electric car line, and Rhododendron Inn, about 9 miles from Mount Hood. As the distance between the two points is about 30 miles the car will total 120 miles a day.

Cost of Truck Operation

An idea as to the comparative cost of operating horse-drawn vehicles and a mechanically-propelled motor wagon is given by the Waverley Co., of Indianapolis, which has compiled figures which are declared to be accurate. It has taken the case of a merchant who uses two 1-ton horse-drawn delivery wagons which are kept in constant operation. The investment, at a low estimate, would be:

Two 1-ton wagons at $380	$ 760.00
Five horses at $220	1,100.00
Two sets harness at $45	90.00
	$1,950.00

His expenses according to figures recently given out by a large truck company would average per year:

Oats	$ 480.00
Hay	227.00
Bedding	45.00
Water and tools	30.00
Stabling	30.00
Shoeing	90.00
Interest at 6 per cent	117.00
Depreciation, 20 per cent	390.00
Driver's wages	1,248.00
Total expenses per year	$2,657.00

Owing to greater speed of the motor car the work of this man's two wagons could easily be performed by one electric of the same capacity. His investment for an electric delivery wagon of 1-ton capacity would be $2,000. His expenses would be:

Cost of current at 4 cents per kilowatt hour, allowing for 375 charges	$ 219.44
Allowance for battery renewal repairs	289.00
Average for tires and other repairs	225.44
Interest at 6 per cent	120.00
Depreciation (10 per cent on $2,000, less battery and tires, $736.46)	126.35
Driver's wages	624.00
	$1,604.23

Thus the merchant's total outlay for horse-drawn service would be $4,607, and for electric service $3,604.23, making a net saving per year of $1,002.77. The figures given for electric service are based on average expenses for a series of 5 years and are taken from the actual experience of owners of Waverley electric delivery wagons in constant service. They can easily be verified, the company declares.

FLEET OF WHITE GASOLINE TAXICABS WHICH IS OPERATED IN BOSTON BY SAUNDERS & BUTLER

The Motor Car Repair Shop

Hints for the Amateur

IN Fig. 1 the rear end of a common type of Bosch magneto for a four-cylinder motor is shown with the covers of the distributer and breaker-box removed for inspection. Both covers were taken off by loosening the screw S, and turning the three-armed yoke, which holds the covers in place, about ½ inch in an anti-clockwise direction, so that it cleared the screws S, S1 and S2. It never should be necessary to loosen screws S1 and S2 to remove covers. The cover to the breaker-box B is secured by a blade contact spring, and can be removed readily, independently of the distributer cover, by drawing the blade about ⅛ inch away from the cover, then swinging it to one side. Both the distributer and the contact-breaker should be exposed when inspection of the magneto timing is desired. In checking the timing of this type of magneto, first have the motor turned over slowly in the direction in which it runs, and learn the direction of rotation of the revolving segment G of the distributer. Let it be supposed that the distributer brush D has been found to turn in the direction indicated by the arrow. Next turn the engine over until No. 1 cylinder is on its firing center. Let it also be supposed, that on doing this, as the firing center of No. 1 cylinder is slowly approached the distributer brush and contact-breaker will be found in the positions shown in the illustration. At this point the spark-lever on the steering wheel should be fully retarded so that a straight line passing through the centers of the rollers will occupy the position indicated by the dotted line L. The motor then should be turned further until the piston passes the firing center and just starts to descend on the explosion stroke. If the timing is correct, then the contact arm A will be in contact with the roller, the platinum points will be wide apart, and the distributer brush D will still be in contact with the stationary segment 1. All that remains in checking up the timing is to see that the cables leading form the top of the magneto go to the right plugs. Assuming that the motor fires 1-3-4-2, cable 1 should go to cylinder No. 1, the front cylinder; cable 2 to cylinder No. 3, the third cylinder from the front; cable 3 to cylinder No. 4, the cylinder farthest from the front; and cable 4 to cylinder No. 2, the second cylinder from the front.

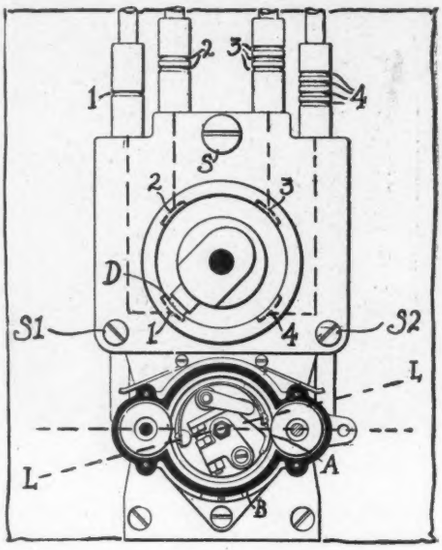


FIG. 1—REAR END OF BOSCH MAGNETO

Adjusting Stromberg Carbureter

In Fig. 2 a common type of Stromberg carbureter is illustrated. Before attempting to adjust this type of carbureter, the air cup F should be set midway between the shoulder on the bottom of the water-jacket and the stop screw P. This is the fixed air inlet to the carbureter. By screwing up the cup F the quantity of air is decreased, and by screwing down the quantity is increased, thereby adjusting the gasoline supply from the spraying nozzle by regulating the quantity of air admitted. The lower spring under the auxiliary air valve contained in chamber V should be adjusted by means of the knurled nut V1 so that the air valve rests lightly against its seat. This is the low-speed adjustment, and probably will not have to be changed. The upper spring over the auxiliary air valve should now be adjusted by means of the adjusting nut V3 so there is about ⅛-inch clearance between the top of the spring S and the nut N on the end of the auxiliary air valve stem. Now turn on the gasoline and see that the float chamber fills. It should rise till the top of the gasoline is about on a level with a line L scratched on the outside of the carbureter body, and if it is not nearly opposite this line, the level may be adjusted by turning the adjusting nut D1 up or down. With this rough adjustment if everything else is working properly the motor always can be started and accurate adjustments made.

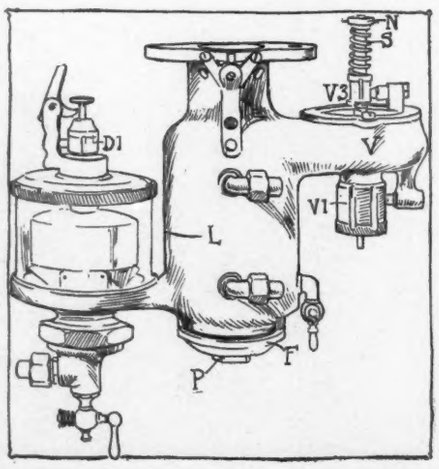


FIG. 2—STROMBERG CARBURETER ADJUSTMENTS

When the motor is running readjust the float level to the line L, if necessary. If the motor is equipped with two ignition systems first run it on the coil system; advance the spark lever half way, open the throttle gradually and see if the motor pops back into the carbureter. If it does it indicates a weak mixture, so screw up a notch at a time on the high-speed adjusting nut V3 until the popping stops. If it does not stop before all the clearance between the spring S and nut N has been taken up, it will be necessary to readjust the fixed air inlet F. If the mixture is still too weak, lower cup a half to a whole turn; this enriches the mixture. Continue lowering the cup by one-half turns until the popping stops. With a high-speed adjustment that is a trifle weak on the battery system, it will be found on shifting to the magneto that it is about right. When a satisfactory high-speed adjustment has been obtained, retard the spark lever, also retard the throttle lever, and see if the motor runs evenly at low speed; then, by depressing or lifting the auxiliary air valve ever so slightly, by laying the finger on the end of the valve stem or taking hold of the nut N it can be determined whether or not the efficiency of the motor can be increased by adjusting the low-speed nut V1. Screwing it up enriches the mixture and screwing it down weakens it. Adjust till motor runs best.

As there is no adjustment of the gasoline flow from the spraying nozzle of this carbureter, other than that of changing the quantity of air admitted at the bottom, several sizes of nozzles are provided so that the highest efficiency may be obtained. If after you have adjusted the auxiliary air valve according to the above instructions, the mixture is still too rich, adjust the auxiliary air valve until it is off its seat, then turn lock nut V3 down as far as it will go, and if the mixture is still too rich, the nozzle in the carbureter is too large. On the other hand, if the motor misses on high speed with normal adjustments tighten up on the auxiliary air valve by turning up the nuts V3 and V1. If these springs are then too tight to get proper mixture put in a larger nozzle. To change nozzles remove the plug P, then unscrew the nozzle with an ordinary screw driver. Then, after fitting new nozzle readjust the float if necessary.

Current Motor Car Patents

Spark Plug—No. 954,697, dated April 12; to Herbert F. Provendie, Boston, Mass.—The unusual and important new feature of the spark plug covered by this patent is that it is provided with a sight or lens through which it is intended that one may look and see if it is sparking while in its operative position in the cylinder of a motor. The construction of this plug is illustrated in Fig. 1, the lens L extending across the bore or channel C which passes longitudinally through the center of the plug in direct alignment with the gap between the sparking points or electrodes. The lens occupies a position in which it is least affected by heat or oil, and is securely held between two soft metal gaskets. Except for this feature, the plug is of conventional design.

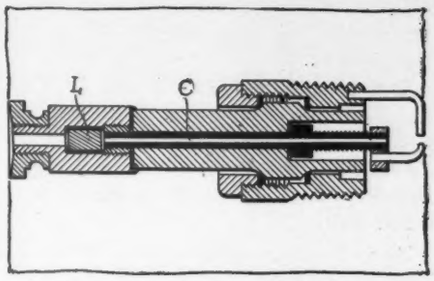


FIG. 1—BEWINDOWED SPARK PLUG

Terminal for Electric Wires—No. 954,872, dated April 12; to Arthur R. Mosler, New York, N. Y.—This patent covers a type of terminal such as is extensively used on motor cars, on the end of the ignition cable where it attaches to the spark plug. As illustrated at the left in Fig. 2, it has three fingers of elastic material. The two side fingers engage an annular groove in the terminal of the spark plug, while the middle finger bears on the top of the plug terminal and has a hole in it which, when it is pushed into place, engages a pin projecting from the top of said plug terminal, thus automatically locking it in place. To loosen the terminal, one has but to lift the middle finger slightly and pull it away from the plug.

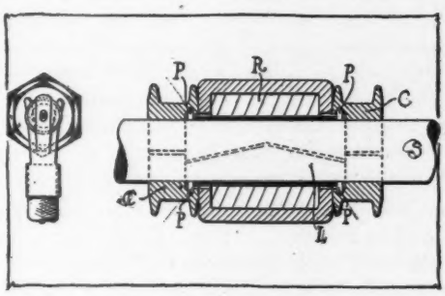


FIG. 2—ELECTRIC TERMINAL AND ROLLER BEARING

Hyatt Roller Bearing Improvement—No. 955,120, dated April 12; to Charles S. Lockwood, Newark, N. J.—This patent pertains to an improvement on the Hyatt roller bearing, whereby the sleeve L, Fig. 2, which forms the inner bearing surface for the rolls R and supports the shaft S, is secured to, and prevented from rotation independent of the shaft S. This improvement is obtained by having the parts of each of the split collars C, which are secured to the shaft S at either end of the bearing, provided with projections P adapted to engage notches in the outer edges of the sleeve L.

Carbureter With Heat Jacket—No. 954,905, dated April 12; to Austin M. Wolf, New York, N. Y.—The carbureter to which this patent relates, as illustrated in Fig. 4, is of the venturi tube, float-feed type, with a jacket J surrounding the venturi tube or mixing chamber C; and although its design is comparatively simple it does not differ radically from other successful types of carbureters now upon the market. Its chief feature is its freedom from complicated adjustments: There is no needle valve adjustment in the spraying nozzle N, the flow of fuel therefrom being regulated either by fitting a nozzle of a size adapted to the engine to which it is attached, or by regulating the level of the gasoline in the nozzle, which is threaded, by removing the plug P, inserting a screwdriver into slots S in the bottom of the nozzle N, and turning it up or down. This adjustable arrangement of the spraying nozzle also eliminates the necessity of a float-valve adjustment. The openings I and H into the jacket J are provided for the entrance and exit of the heating medium obtained from the motor.

Carbureter Needle Adjustment—No. 954,488, dated April 12; to Austin M. Wolf, New York, N. Y.—This patent relates to a float-feed type of carbureter, illustrated in Fig. 5, in which the needle-valve V indirectly controls the flow of gasoline from the spraying-nozzle N, by regulating the atmospheric pressure or producing a partial vacuum in the float-chamber F. The spray-nozzle of this carbureter is of the same construction as that of the carbureter shown in Fig. 4, and has the same advantages; but it is noticeable that the walls M of the mixing chamber are straight and not of the venturi type.

Simple Carbureter—No. 954,630, dated April 12; to Albert Howarth, Providence, R. I.—This patent relates to a conventional type of float-feed carbureter, a sectional view of which is shown in Fig. 3. It differs, however, from the ordinary types in several respects: The spraying nozzle N is fitted with a cap C which is provided with longitudinal discharging slots extending radially through the tubular sides of said cap. These slots are adapted to discharge gasoline spray out into the ascending air currents in the concentric space surrounding the spraying-nozzle. An adjustable auxiliary air admission valve A is also provided with means to operate it.

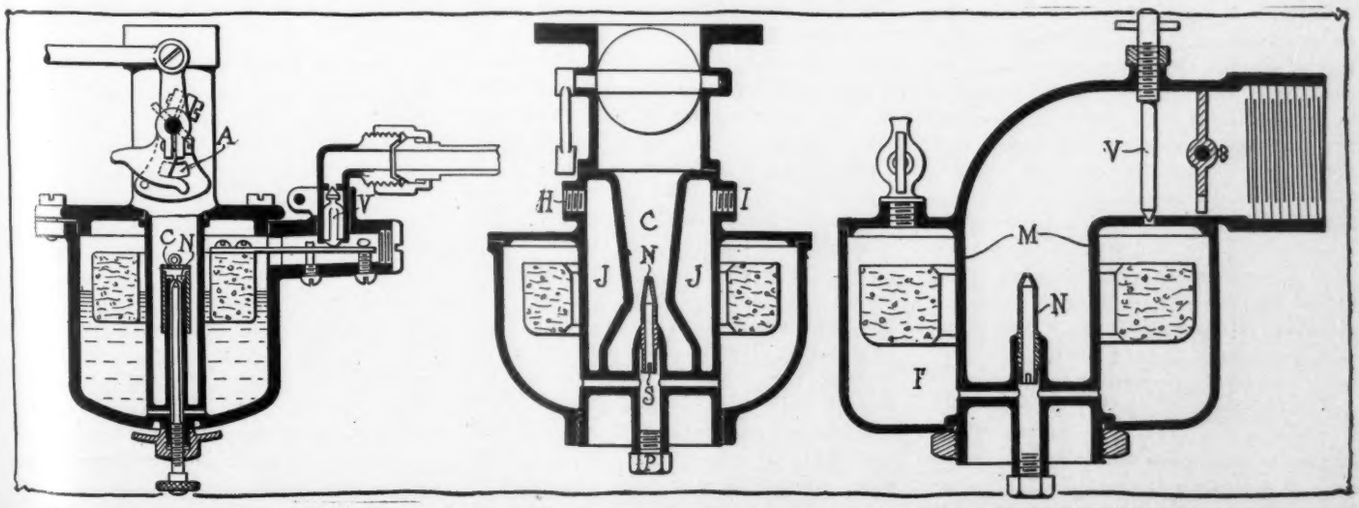


FIG. 3—CAP ON SPRAYING NOZZLE FIG. 4—CARBURETER WITH HEAT JACKET FIG. 5—ATMOSPHERIC SPRAY NOZZLE ADJUSTMENT.

From the

FIRESTONE-COLUMBUS in Glidden—The Columbus Buggy Co., of Columbus, O., announces that it will enter two cars in the Glidden tour.

Job for Ferguson—The promoters of the Munsey tour, which is scheduled to start August 15, announce the appointment of E. L. Ferguson, secretary of the contest board of the A. A. A., as manager of the tour.

Another Motor Patrol—The police department of Niagara Falls, N. Y., has requested that $3,000 be placed in the tentative estimates of the expenses of that city for the coming year for a combination patrol and ambulance motor car. This has been done and it now seems likely that the motor car will soon be purchased.

Charges Mismanagement—B. R. Brown, assistant in the office of the auditor of accounts, charges in a report which has just been turned over to the secretary of state with a recommendation that there be prompt action taken, that the New Jersey motor vehicle department of the state is badly mismanaged by its present head, J. B. R. Smith. While there is nothing dishonest charged against the commissioner, still the secretary of state is preparing to investigate this department. Commissioner Smith claims every cent collected has been banked and that he has a record of every expenditure.

New Club Choses Officers—The Green County Automobile Club of Wisconsin, in annual session at Monroe, Wis., elected these officers: President, R. D. Gorham; first vice-president, W. B. Monroe; second vice-president, J. C. Murdock; secretary, P. J. Weirich; treasurer, J. H. Theiler; directors, Rudolph Schiesser, C. W. Emrick, C. S. Dodge, Dr. J. Morgan, R. C. Whitcomb and Edward Wittwer. It was decided to erect danger signals at all dangerous highway points in the county and request railways to make crossings safer by grading them to the level of the highway. The members decided also to arrange with town chairmen to put up signboards and guideposts where missing.

Detroit Progress—President J. S. Stringham of the Detroit Motor Club is planning an active season for the organization, with special designs on an improvement in the methods of charting streets and highways in and about the city. He announces that the club has already made progress with the Detroit common council, in its effort to secure the replacement of the street signs in Detroit which have to a large extent disappeared. The club is preparing a handbook containing the motoring laws of the United States and Canada, with particular attention to those of Michigan and neighboring states. The following board of governors was appointed at the last meeting of the club, at which eighty-five new members were voted in: William F. V. Neumann, Frank Briscoe, Robert K. Davis, Charles A. Grant, Herbert Flint, Thomas W. Henderson. The Detroit Automobile Retailers' Association, which recently decided to abandon its annual reliability run, has decided to substitute a tour to Chicago instead.

Will County Officers—The officers of the recently formed Will County Good Roads and Automobile Association of Illinois are as follows: President, Sebastian Lagger; secretary, E. W. Steinhart; treasurer, Robert T. Kelly.

New Touring Scheme—The Pittsburg Post will conduct a series of summer tours. The first tour which was scheduled as the Knox run, took place a few days ago and was from Pittsburg to Butler and return. The second trip was made last Saturday to Uniontown, Pa. Photographs were taken at various places along the route to show the condition of the roads, etc.

Black Crow Stunt—The Phillips Automobile Co. of St. Louis has begun a novel endurance test. A Black Crow car is to make ten round trips, one each consecutive day, between St. Louis and DeSoto, Mo. The distance of each round trip is 104 miles. An accurate record of the gasoline and oil for each trip will be kept. It is the aim of the company to show that the Black Crow is capable of making the 1,040 miles without accident. The trips are to be made until completed each day regardless of weather conditions.

Club With Good Object—John C. Wagner, of Racine, Wis., has started a movement among owners at Milwaukee, Racine and Kenosha, Wis., to raise $3,000 annually in dues to a proposed tri-city good roads club for the purpose of keeping the highways between these cities in good repair during the motoring season. Members are being solicited on condition that no one will be asked to pay until 300 have subscribed. The club will pay two men with teams to go over the roads with scrapers and split-log drags after each rain to fill holes and otherwise improve the road bed. The work must necessarily be done under the supervision of the town boards. The plan is expected to be a great success.

Plucky Motorist—The experience of W. H. Hanson on his recent tour from Saratoga Springs, N. Y., to San Francisco via New Orleans in a Stearns has resulted in a general clean-up of the Louisiana rowdies who infest the swamp-lands of that state. Hanson, with his wife and son were held up by a gang of these terrorists, popularly known as red-necks, near Dutchtown, La. The ruffians forbade them the public highway and by their insulting manner forced Hanson to go back. He drove back to the nearest town, picked up a deputy sheriff and the entire party with drawn guns started for the scene of the trouble. There was a moment of indecision, and then the gang made for cover, without firing a shot. Hanson immediately made complaint to the authorities, with the result that a vigorous crusade has been started against the rowdies by the state authorities.

Club for Bloomington—The members of the Bloomington Automobile Club of Bloomington, Ill., will hold a carnival in that city May 11. Speed contests, hill-climbing contests and a parade will be included in the program.

Wants a Roadability Run—The Automobile Club of Philadelphia has decided to promote a roadability run, to take place early in June. The entries will be limited to club members, of which there are now nearly 1,100, and the objective point of the run will in probability be some one of the prominent New Jersey coast resorts—Atlantic City, Cape May, Wildwood or Lakewood.

Regal Reaches Boston—The Regal Plugger arrived in Boston Saturday on its swing around the circle and the total mileage for the car then was something near 19,000 miles. Its mileage on the present run totaled more than 10,000. The car was met at the reservoir at noon and escorted by a dozen other Regal cars driven by owners and headed by A. W. Mutty and Roscoe B. Davis of the local branch. A parade down town took place.

Captain Munn President—Captain J. W. Munn of Galveston was elected president of the Texas State Automobile Association when permanent organization was effected recently. R. W. Carr was elected secretary-treasurer; Dr. A. H. Evans of Eagle Pass, first vice-president; R. E. McKie of San Marcos, second vice-president; W. W. Seley of Waco, third vice-president. Other directors present at the meeting were M. O. Kopperl of Galveston, and C. C. Cresson of San Antonio. E. H. R. Green of Dallas is chairman of the committee on charters and by-laws. The next meeting of the directors will be held August 2 in Galveston. At that meeting the by-laws will be adopted.

Wisconsin Registration—From thirty to fifty licenses are being issued daily by the secretary of state's department of Wisconsin and the registration is expected to reach 12,000 by April 30. On April 18 eighty-five licenses were issued, this marking a new record. The 11,000-mark was reached on April 19. The registration thus far in 1910 is more than 100 per cent greater than for the same period in 1909. This is in face of an increase of the license fee from $1 to $2. Many owners have confused the license fees under the law passed by the last legislature. The $2 fee is not an annual fee, but is good so long as the machine remains in the hands of the owner who takes out a license. If the machine is sold or ownership transferred,

a new license and number must be procured at $2. Dealers' licenses cost $5, which entitle the holder to four duplicate number plates.

Threat by Uncle Sam—The United States postoffice department is going into the road inspection business, and unless county roads in the state of Washington are found in passable condition, rural service along them will be discontinued.

Ohio Club Election—The Jefferson County Automobile Club met at Steubenville, O., last week and elected these officers: President, C. E. Francey, Toronto, O.; vice-president, J. E. McGowan, Steubenville, O.; secretary-treasurer, Justin A. More, Steubenville, O. Directors: J. E. Wheaton and A. G. Lee, of Steubenville. The club has a membership of seventy-five.

Will Accept Decision—The state highway department of Pennsylvania has been advised by the attorney general's department not to appeal to the supreme court from the decision of Judge Staake, of Philadelphia, who recently ruled that a chauffeur was a professional driver—one who drove for wages—thereby removing the necessity of every person, not an owner, who desired to run a car, taking out a state license, is ruled by Assistant Attorney General Hargest and which the Quaker City Motor Club so successfully fought.

Tags for Louisville—The secretary of the sinking fund commission, A. Moss Terry, has just received a consignment of 1,200 tags, which are to be put out on May 1, when the old motor licenses expire. Mr. Terry states that 863 licenses for motor cars are now out in Louisville and he expects a heavy increase before the end of the next fiscal year. The tags are to be furnished those obtaining licenses at $5 each. Badges to the number of 1,000 for licensed chauffeurs are also in the possession of Mr. Terry and will be distributed on May 1.

Badgers Organizing—The Manitowoc County Automobile Club is the name of the organization effected by owners of Manitowoc, Two Rivers and other cities and villages of Manitowoc county, Wis. John E. Plumb of Manitowoc was elected president; J. E. Hamilton of Two Rivers, vice-president; E. J. Carroll, Manitowoc, secretary; T. W. Gray, treasurer. President Matthew C. Moore of the Wisconsin State A. A. attended the organization meeting and it was decided to affiliate with the state body at once. The membership will be about 100 before the charter closes. Two Rivers will furnish thirty and Manitowoc about sixty-five. The objects of the club are: To work for the establishment of a permanent Lake Shore drive between Manitowoc and Two Rivers; to enforce the laws providing for sign boards and guide posts throughout the county and state; to adopt measures that will result in the use of caution and care and strict observance of all laws relating to speed and rules of the road; to discourage speeding by reckless drivers; to seek members and others to use the utmost courtesy to farmers and other users of horsedrawn vehicles.

Four Winds

Parade for Champaign—Thursday, April 28, the Twin City Automobile Club of Champaign and Urbana, Ill., held its first parade. The event was held in the evening and the request of the club management for every motor car owner to turn out resulted in a great display.

Chicago's Big Parade—The floral parade of the Chicago Automobile Trade Association which will be held May 7 promises to be an affair of magnitude. Already more than 100 cars have been entered by the dealers and the Chicago Association of Commerce not only has endorsed the proposition but has sent out 4,000 letters urging its members to participate in the motor turnout.

Post Pathfinder Out—The work of blazing the route for the Washington Post reliability tour, May 27-31, was begun Saturday, when a seven-passenger Amplex left Washington for Richmond. The route to Richmond will be via Leesburg, Winchester, Strasburg, Newmarket, Staunton, Basic City, Charlottesville, Paynes, and Goochland. A part of the route is through the far-famed Shenandoah valley, where the road conditions are little short of ideal. The trip up from Richmond will be through Louisa, Gordonsville, Culpepper, Remington, Warrenton, and Manassas.

Nashville Starts a Club—Nashville at last is to have a club, the arrival of the official pathfinder for the Glidden tour stirring up the enthusiasm that brought it about. The club was organized at a general meeting held for making arrangements for receiving the Glidden tour pathfinder. Leland Hume was elected to temporarily direct the affairs of the organization and committees were named to draw up constitution and by-laws. R. L. Burch, president of the state fair, tendered the use of the Cumberland Park club house until the club can arrange for permanent quarters.

Good Roads Missionaries—The Lehigh Valley Motor Club will inaugurate its present season's good roads work with a smoker and luncheon to all the road supervisors of Lehigh county, Pa., to be followed by a motor trip into the country districts to afford an object lesson in road building. A demonstration of steel and log road drags will be made on the clay roads. A number of these implements have already been furnished to several supervisors by the club, the 3-mile stretch from Catasauqua to Shoenersville having been kept in first-class condition by Supervisor C. O. Cressman with a drag provided by the club. During the coming trip it will be demonstrated that two horses and one man can drag 15 miles of dirt roads in a single day.

Maxwell Made Pathfinder—President W. J. Morgan of the Motor Contest Association, under whose auspices the around New Jersey reliability contest will be held on May 10 and 11, has awarded the path finding work to the Maxwell-Briscoe Motor Co.

Schuster Makes Good—George Schuster, who drove the Thomas car in the race from New York to Paris, and who is now with the Boston branch, was notified last week that he would have to pass an examination as to his ability as a motor car driver by the examiner of the highway commission. So he responded and made good.

After Cobe Cup for Speedway—E. A. Moross, manager of the Indianapolis speedway, visited Ira M. Cobe, president of the Chicago Automobile Club and donor of the Cobe cup, on Monday of this week. Moross desires to convert the Cobe cup into a speedway event and wishes to feature it on July 4. His proposition to Mr. Cobe is now being given consideration.

Pays to Belong to Club—Arthur M. Crumrine, representing the Columbus Automobile Club, called on Director of Safety McCune of Columbus, O., asking that the promiscuous arrest of motorists whose cars are without tail lights be stopped. The club is desirous of coming to some sort of agreement with the police department. Policemen have been instructed to show leniency when the driver shows a membership card of the Columbus Automobile Club.

Prefer Roads to Racing—At the regular monthly meeting of the Portland Automobile Dealers' Association it was decided that entering cars in races was not profitable, and that instead of races, therefore, the dealers would band all their efforts towards securing better roads in Oregon. Most of the Portland men say they have not profited greatly by the past 2 years' experience in racing. They have concluded that races are not a paying proposition, but that good roads are, not only to themselves but to the entire country.

Raise Fund for Club House—Upward of $11,020 was raised in an hour at a smoker held at the rooms of the Buffalo Automobile Club last Saturday evening. The money will be added to a fund being raised to pay for a club house to be built for the organization in Clarence Hollow, 17½ miles from Buffalo. In connection with the project $75,000 will be issued. Drawings of the new building were explained by President Enos of the club and Robert Cartere, architect. All the members will be given a chance to take bonds. The structure will probably be ready by July 1.

WAR OF MIDGETS, THE INCH AND THE METER

Editor's Note—This is the third and last installment of the series devoted to the discussion of the respective merits of the English unit system and the metric system of measurements.

Woods Motor Vehicle Co.

"WE are not in favor of changing the present English unit system at all We cannot see that the metric system has enough advantages to adopt it as compared to the confusion that the change might cause for years to come. It would be necessary to have this change made in all lines of mechanical manufacture, and in order that machinists and other workmen that we employ in the motor industry be experienced in time in the new system, we do not think that interchangeability of parts in connection with metric and English units are necessary. When it comes to bolts, screws, etc., we believe it might be a good scheme to have a manufacturer adopt some such system as the A. L. A. M.'s. We hope the change will not be made in the near future, as we are too busy with other matters to waste time in trying to introduce something which, in years to come, might be a little more convenient."—Woods Motor Vehicle Co., F. J. Neuman.

E. R. Thomas Motor Co.

"We would prefer the metric system; it is a logical one, but it is not probable that we shall make any change from the English system which we are at present using, on account of the many complications that would be caused. We have, however, no defense to offer for a system which is certainly crude when compared with the metric. We use no metric measurements at all at the present time."—E. R. Thomas Motor Co., H. G. McComb.

Hupp Motor Car Co.

"Engineers recognize the metric as the best system of measurements, but the average individual has not sufficient knowledge of the metric system to discern its simplicity and time-saving qualities. Its universal adoption can only come by its more general tutoring in the public schools and colleges. Then future generations, having a thorough understanding of its worth, will gradually bring it into use. The motor car industry is too firmly established to change, and its use by aeroplane manufacturers is the only industry where its adoption would not mean the expenditure of millions."—Hupp Motor Car Co., E. A. Nelson.

Johnson Service Co.

"We firmly believe in the metric system, but we think that the English system is so intrenched in both England and America, that without a stronger government than we have it is impossible to force the use of the metric system. It is useless to talk about it. It is true, all motor cars can be made on that system, but there will be trouble right along, in our opinion, because these motor cars would come into the hands of outsiders, and when screws, etc., were needed and might be purchased at a hardware store, they could not be gotten. There is much fault found already by certain manufacturers using special threads, evidently for the purpose of obliging people to come back to them for small parts, which we consider a mean trick. We do not believe that for some time it is practicable to undertake to introduce the metric system, but we do think that all screws, bolts, etc., in motor cars should be United States or other well-known standards."—Johnson Service Co., W. S. Johnson.

Nordyke & Marmon Co.

"Other things being equal, we would very much prefer to use the metric system in our car work as against the English system, and are distinctly not in favor of the mixed system, but hardly believe we could say that we would be in favor of the American car industry adopting the metric system, when we consider the enormous expense that would be involved in all shops to make the change and the difficulties we would run into in educating our workmen to it. We do not believe, in our own case, that it would pay."—Nordyke & Marmon Co.

Reo Motor Car Co.

"We do not believe it is practical to change from the English system to the metric, when you stop to consider that it would affect stock in every hardware as well as supply store in the United States, to say nothing of the change in all the machine tools. In fact, it would mean so much to make the change that it would certainly meet with failure."—Reo Motor Car Co., R. E. Olds.

Oscar Lear Automobile Co.

"We are absolutely in favor of discontinuing a mixed system, and have succeeded in practically eliminating the metric from our business. We recognize the merits of the metric system of measurement over the English system. All of our drawings and records, past and present, however, are made under the English system, and to change all of the dimensions on these drawings would be an endless amount of expense and annoyance. Furthermore, the unfamiliarity of our machinists with the handling of the metric system would undoubtedly result in a great loss of material and time to the company during the period of transition. We have been thinking for many generations in inches, feet, yards, etc., and it would not be a simple matter, in our opinion, to adapt ourselves to the metric system. The transition, in our opinion, should be a matter of evolution, and not a thing adopted today and in full use tomorrow. All of our expensive tools are made for the English system, and these would be practically useless if the metric system were adopted. While the United States government has legalized the metric system, it has never adopted it as its standard, and until the government sees fit to adopt the system, making it practically universal, we hardly think we are justified in incurring on our company the additional expense and unlimited annoyance due to the change."—Oscar Lear Automobile Co., Charles L. Bauer.

Chadwick Engineering Works

"We believe that the metric system has many advantages over the English system, but owing to the fact that a change would create all kinds of confusion, we would not favor making any change in the motor car industry. The industry is growing too rapidly to stand for a jolt of this kind at this time. Later, when the factories are in position to take better care of business, it might be worth while to consider it."—Chadwick Engineering Works, L. S. Chadwick.

R. C. Carpenter

"In so far as my opinion regarding the feasibility and general results of adopting the metric system of measurements in the American motor car factories in place of the English system is concerned, I would state, first I am quite sure that it is a feasible thing to do, since this industry is independent, in a large measure, of the older ones, and, further, I believe there is abundant evidence to show that the system can be adopted in factories without increasing the cost of manufacture. The advantages which come from the system are those due to the use of the decimal subdivision and to the fact that the motor car parts would be interchangeable with those made on the continent of Europe. The principal disadvantages of the metric system are due to the fact that decimal subdivisions can not be naturally divided by a continuous system of halving resulting in halves, quarters, eighths, sixteenths, etc., which is a marked advantage of our present system. The decimal system tends to useless multiplicity of standard parts, where a system of aliquot numbers would use fewer parts. It would not be feasible or wise to pass any law requiring the use of the metric system, but I do believe that in many industries it can be adopted with advantage, and prominent among these industries is the manufacture of motor cars."—R. C. Carpenter.

Corbin Motor Vehicle Corporation

"We would much prefer to see the metric system adopted as the United States standard, but inasmuch as such is not the case and not likely to be the case, we are opposed to its use by American manufacturers."—Corbin Motor Vehicle Corporation, M. S. Hart.

Legal Lights and Side Lights

IT cannot be said that the touring season of 1910 has opened, but it is safe to predict that many motorists who annually suffer from an attack of wanderlust are carefully making up itineraries for the summer's campaign, picking out good routes and investigating the restrictions placed upon them by the different states. If the federal registration law fathered by Charles Thaddeus Terry, chairman of the legislation committee of the American Automobile Association, were in force much of the preliminary work of the tourist would be saved; but unfortunately such is not the case and necessarily much time, trouble and labor are wasted before tourists can complete their plans.

At the present time there are thirty-eight states which have motor laws of some sort or another. Some of these are new laws passed during the winter, while others have withstood the attack of the legislators and will hold over for another season. Some of these old laws are not just exactly what the motorists would like, but as much can be said for several of the new ones. The tendency of the recent legislation has been more to raise the tax on motor cars rather than any attempt to cut down speed limits. In fact, it might be said that the solons have been rather liberal in defining the limits of pace. However, liberal they may have been in this regard, though, they have more than made up for it by the manner in which some of them have sought to reap a financial harvest. In most cases, this increased revenue has been brought about by taxing under a horsepower rating rather than so much per machine.

The most prominent cases in new laws are found in New York, New Hampshire, Virginia, Rhode Island, Maine, Connecticut, Pennsylvania, Michigan and Maryland. New York has put the Callan bill through the assembly and at the present writing there seems to be nothing to prevent it from becoming a law. Maryland has the Swann bill which is not entirely satisfactory to the motoring vicinity. Connecticut has put through a measure which is somewhat radical. There are six states in which there are no motor laws—Montana, Texas, Wyoming, New Mexico, Oklahoma and Louisiana—but in those commonwealth motor traffic is governed by means of city ordinances. In twenty of the states considerable latitude is shown as regards the non-residents, the following placing no restrictions whatsoever on interstate traffic—California, Illinois, Indiana, Iowa, Kentucky, Maine, Minnesota, Nebraska, New York, North Carolina, North Dakota, Ohio, Oregon, South Carolina, South Dakota, Washington, Wisconsin, Texas and Utah. Alabama, Tennessee, New Jersey and Virginia insist upon visitors registering, while Michigan and Delaware allow outsiders to travel in the state if the commonwealth from which the travelers come has a reciprocity clause in its law. Connecticut allows 10 days in 1 year, the District of Columbia 10 days, Florida 30 days, Massachusetts 10 days, Missouri 20 days, New Hampshire 10 days, Pennsylvania 10 days based upon reciprocity, Rhode Island 10 days, and Vermont 10 days, also based on reciprocity.

Changes in State Motor Laws

A feature of the Swann law which has been adopted by Maryland will be appreciated by tourists. It provides for the erection of signposts on the roads and highways by the cities and towns and provides penalties for failure to comply with this law. This section orders that the authorities shall "erect and maintain at or near the boundary line of all important thoroughfares leading out of said cites, towns and villages, guideposts for the direction of travelers which shall be a substantial post not less than 8 feet high near the upper end of which shall be placed a sign of metal or wood upon which shall be plainly marked the name of the next town or place to which the road leads, the number of miles to the same and a figure or arrow pointing to such town or place." County commissioners are ordered to place similar signs at every place of intersection of important highways. If this is not done the state's road commission will erect the signs and collect from that county, city or town.

Maryland divides its registration fee system into two classes. Class A calls for $6 per year for each car with a rating of 20 horsepower or less, $12 from 20 to 40, and $18 for over 40. Class B provides $3 a year for each certificate of registration of a motor vehicle used only for the transportation of merchandise. A motor car dealer pays $24 a year for each certificate, said certificate entitling him to use four duplicate sets of tags which are interchangeable. No Marylander is allowed to operate a car upon the Maryland highways unless he has obtained an operator's license which is issued by the commissioner of motor vehicles to any person 16 years of age or over. Allowance is made for youth, however, in that persons over 14 and under 16 may take a special examination to operate a car belonging to such person or his or her father or guardian. The fee demanded is $2, and no license badge has to be worn. As to non-resident owners and operators Maryland believes in reciprocity and so long as the stage tag of the visitor is displayed he can drive upon Maryland's roads for two periods of 7 consecutive days in each calendar year without taking out a Maryland license. However, for a violation of any of the clauses the visitor will have to register and take out a license to drive. Maryland permits a speed of 12 miles an hour in thickly-settled or business parts of cities, towns or villages, 18 miles an hour in outlying districts, and 25 miles an hour in the open country.

The Callan bill in New York grades the registration fee according to horsepower with a charge of $5 for a car of 25 horsepower or less, $10 for from 25 to 35, $15 for more than 35 and less than 45, and $25 for 45 horsepower or over. Commercial vehicles are charged $5 per year. The bill prohibits the making of local ordinances regulating motor traffic except in a case of first-class cities and these must be made and submitted before the bill becomes a law on August 1. As to the speed there is a limit of 30 miles in the country and 15 in the villages. The fees raised from registration will be spent upon the maintenance and improvement of the roads in the state. Non-residents are exempt from taxation providing the state in which they live has a reciprocity clause in its law. The age limit is placed at 18 years of age, and the rate of toll is regulated, being fixed at the minimum rate allowed by law for a vehicle which is drawn by two horses. The bill abolishes the speed trap nuisance.

Pennsylvania's new law was passed in April, 1909, but did not become operative until the first of the present year. It provides for the registration of operators of cars, which was interpreted by the state authorities to include owners. An attempt to collect from this class, however, resulted in a test case in which the court decided that the term chauffeur applied only to persons who drive motor cars for hire. This, therefore, lets the Pennsylvania owner out so far as registration is concerned. The charge for driving licenses is $2, and the state highway department has the matter in charge. A badge is issued which must be worn by the driver. Motor cars may be registered and licenses issued at any time during the year, but all registration and licenses cease to be effective after December 31 of the year issued. Non-residents are exempt for a period of 10 days if they carry their own state tags and the state from which they come is a believer in reciprocity.

The applications for registration are made to the state highway department or an agent which it may appoint and the fees provided for are $5 for cars of less than 20 horsepower, $10 for cars of from 20 to 50, and $15 for cars of 50 horsepower or over.

(To be continued.)

Among the Makers and Dealers

Wrong Price Given—In last weeks' advertisement of the Streator Motor Car Co. in Motor Age the price of the toy tonneau was given at $1,500. It should be $1,560.

Grabowsky With U. S. M. C.—The United States Motor Co. announces that Morris Grabowsky, who for the past 7 years has been secretary of the Rapid Motor Vehicle Co., will be manager of the commercial vehicle selling division.

Railroad Recognizes Maxwell—Through the efforts of Traffic Manager Moore, of the United States Motor Co., the Lake Erie and Western Railroad Co. has decided to construct a new passenger and freight station at Newcastle, Ind., where one of the four Maxwell factories is located.

Working on New Rubber Plant—The site for the new plant of the Kelly-Racine Rubber Co., of Racine, Wis., has been staked out and work will commence at once. The first building will contain more than 6 acres of floor space. The buildings adjoin the new testing track of the Mitchell-Lewis Motor Co. of Racine and occupy a large part of the Mitchell-Lewis tract.

Regal Erecting Additions—The Regal Motor Car Co., of Detroit, is building another addition to its plant. This new structure is a combined brick, steel and concrete construction of the latest type, covering an area 249 by 598 feet and will be two stories high when completed. One of the most interesting features of this new building is the system used in the receiving and distributing of rough and finished stock. A large storeroom is located in the center of the first floor and surrounding this room and running around the different machine groups is a circular track, or roadway, 20 feet wide. This track will be used to accommodate a 3-ton motor truck which in turn will be used to distribute rough stock to the different departments of the plant and to reconvey the same to the finished stock room when made into completed parts. This arrangement is duplicated on the second floor, the motor truck being transferred thereto by large elevators.

TAG DESIGNED FOR A. L. A. M. DEALERS

State Fair Has Motor Plant—The Michigan state fair is building an addition to its plant on Woodward avenue, which will be devoted exclusively to motor cars and accessories. The building will be 250 by 125 feet in size and two stories, the upper to be reserved for the exhibits of accessories. The total appropriation for the building is $30,000.

Make Fight on Garage—Lawyers representing various property owners of Buffalo appeared before Commisisoner of Public Works Francis G. Ward of that city last week and urged him to prohibit certain parties from building a garage in Richmond avenue. The building was to have been of brick and would have faced on Dorchester road. This is a fashionable section of the city. Colonel Ward has taken time to consider the matter. This probably is the first protest against the erection of a garage recorded in Buffalo.

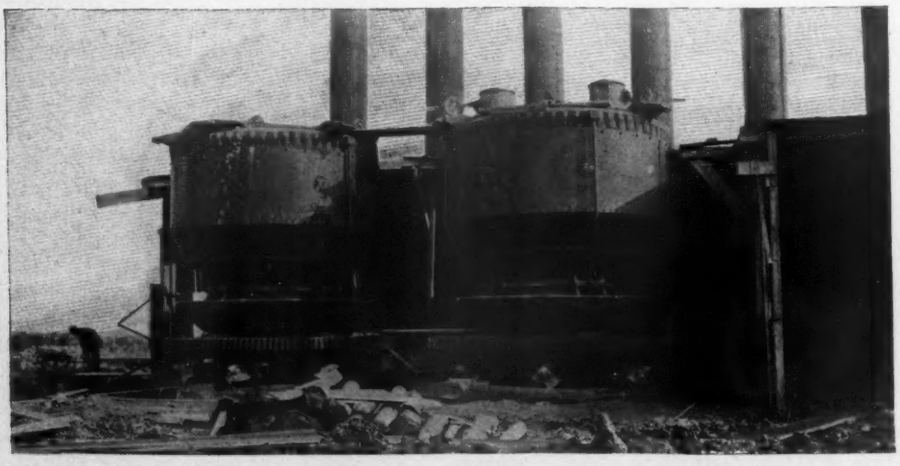
Another Tire Recruit—The Walpole Rubber Co., of Boston, Mass., is the latest to go into the tire business. The company has recently been reorganized with E. W. Furbush as general manager.

Ford Adds to Plant—The Ford Motor Co. has been adding to its plant at Highland Park, Detroit. One of the new buildings is a foundry 200 by 200 feet where castings are made, while another is a gas-producer plant of astonishing proportions.

Robert E. Lee Secretary—Robert E. Lee has been elected secretary for the third time of the St. Louis Manufacturers' and Dealers' Association. Harry W. Blodgett has been appointed counsel for the association. Mr. Blodgett will draft laws to be introduced at the next legislature of the state and in the municipal assembly.

Will Make Hines Car—Arrangements have almost been completed whereby O. Alexander and W. R. Hines will manufacture the Hines car in quantities. A company is being organized in Cleveland to manufacture at least 700 cars the first year. W. R. Hines spent several years in developing the two-cycle engine which will be used on the car. One Hines car has been driven 48,000 miles. The company will locate either in Cleveland or Detroit.

Gigantic Garage Planned—One of the largest motor car garages in the United States will be erected in Detroit this summer, on property recently purchased on Grand Boulevard near Woodward avenue, according to the announcement of Thomas D. Buick, president of the Buick Auto Supply and Garage Co., of Saginaw, which was incorporated several months ago. The property purchased comprises 36,750 square feet, nearly all of which will be covered by a fireproof two-story structure, 100 by 245 feet in size. The lower floor will be entirely without posts and will be equipped for a garage proper and a machine shop, the latter being, in fact, a complete motor car factory with appliances for the complete construction of a car's component parts, and employing over fifty men. The garage will have quarters for 400 cars. On the upper floor will be the offices and stock rooms, the garage being the main headquarters of the company, which plans to establish forty branches in the various cities of Michigan. The concern has no connection whatever with the Buick Motor Co., of Flint. The Detroit Automobile Dealers' Association already presents a hostile front toward the invasion of the new concern, and formal notice has been served that all who befriend the new institutions



GAS-PRODUCING PLANT WHICH HAS JUST BEEN BUILT BY FORD MOTOR CO.

will be considered as performng an unfriendly act toward the dealers and garage men of the organization.

Hall Penn. Sales Manager—Gerald P. Hall, formerly identified with the sales of the Midland Motor Co.'s product, has severed his connection with that concern to join the Pennsylvania Auto Motor Co. as general sales manager.

Putting Up New Plant—Henry J. Speiker & Co., of Toledo, have been awarded the contract for the erection of the large Gramm-Logan factory buildings at Lima, Ohio. The work will cost a quarter of a million dollars and is to be completed by September.

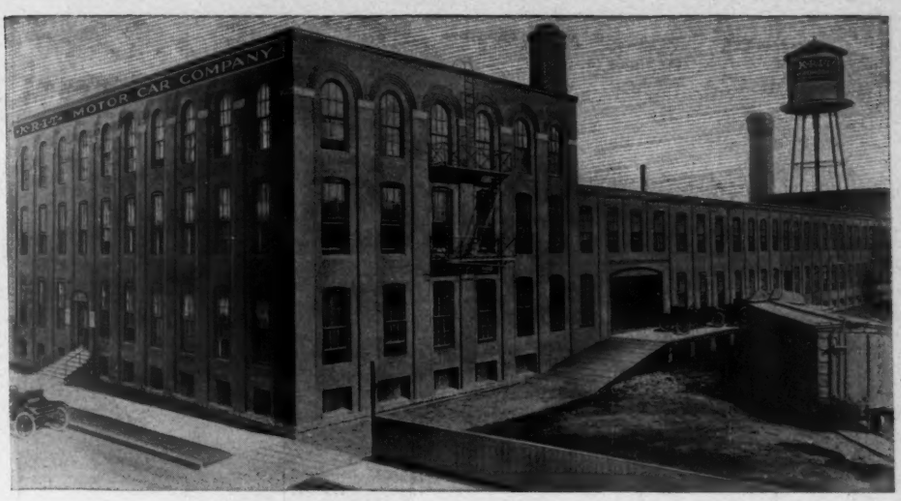
Steel Companies Merge—A consolidation of the Standard Gauge Steel Co. and the Standard Connecting Rod Co. has been effected. The new corporation will be known as the Standard Gauge Steel Co. The works and general office of the new company will be at Beaver Falls.

New Plant for Buffalo—The Superior Motor Vehicle Co. has broken ground at 1086 Elmwood avenue, near the plant of the Pierce-Arrow Motor Car Co., Buffalo, for the construction of a one and one-half story brick and steel motor car factory. It is expected that the plant will be in operation before the end of the year. About 200 men will be employed, and $80,000 will be expended to erect the plant.

New A. L. A. M. Tags—The Association of Licensed Automobile Manufacturers is preparing a sign to be sent to every dealer in America who handles cars licensed under the Selden patent. The sign is lithographed in blue, white and gold on celluloid. It is 14 by 18 inches and is made to hang in the window or on the wall in a salesroom. The signs will be ready for distribution about May 10.

New Minneapolis Garages—Four motor garages will be opened in Minneapolis within the next 2 weeks. The Studebakers will move into their new building this week. The Detroit electric also has a new home which will be ready for occupancy in a few days. The White Garage Co. has a new building on Tenth street, between Sixth and Seventh avenues, and will move into it May 15. The MacArthur-Zollers garage at Thirteenth street and Nicollet avenue is also nearly ready for a formal opening.

Kissel Using Tent—The Kissel Motor Car Co. of Hartford, Wis., has been so pressed for room that last week a huge tent was erected in front of the main factory, in which finishing touches are being put on the Kissels before being shipped or delivered. From fifty to sixty cars are being accommodated under the big top. The weather has been so favorable during the spring that it was possible to do much work outside, although the unexpected and unprecedented snowstorm of Saturday interfered with this to a great extent. Several new buildings are now in course of construction and will be ready during the late summer. From ten to twelve cars are being shipped daily.



FACTORY OF THE KRIT MOTOR CAR CO. IN CITY OF DETROIT

Plant for Pittsburg Six—The Pittsburg Motor Co. has bought from the Dawes Mfg. Co., of Braddock, Pa., a $25,000 site in Corey avenue, Braddock, on which it will build a large plant for the manufacture of the Pittsburg Six. The company's plant is now at New Kensington, Pa. The new factory will be built this summer and will employ 500 men.

Wayne on the Map—The manufacturing industry will be represented next year in Wayne, Mich., which is considered a Detroit suburb. The Swift Auto Co. has broken ground for a factory, 60 by 250 feet in size, of brick and on a cement foundation. Detroiters have been promoting the plan and a sample car is already in operation.

Black Crow Selling Well—The Black Mfg. Co. of Chicago, which has contracted for the entire output of the Crow Motor Co. of Elkhart, Ind., has sent M. E. Hoshaw to Elkhart to be its personal representative on the ground, in accepting the completed cars from the Crow company and attending to their disposition. The Crow company is turning out three to five cars per day and has shipped about 300 of the 1,400 orders which the Black company has booked for this season's delivery. The remainder is to be turned out between this and the last of August.

McIntyre Succeeds Cooper—A. H. McIntyre has been appointed to fill the vacancy at the Boston branch of the Ajax-Grieb company caused by the resignation of J. H. Cooper.

Patterson Gaeth Sales Manager—George S. Patterson, motor car dealer of Cleveland, has been appointed general manager of the Gaeth Automobile Co., the appointment to take effect May 1.

Accessories Men Organize—The St. Louis Automobile Accessories Association held its annual meeting and nominated a ticket to be elected the middle of May. At that time an open air dinner will be given.

Lamp Plant Expanding—The Victor Lamp Co.'s new plant at Cincinnati is ready for occupancy and the oil lamp, gas lamp and generator factories soon will be all under one roof. Since starting to build the company has been obliged to let a contract for an addition of 40,000 more feet. It has installed a 300-horsepower power plant which will give ample facilities for handling the 1911 business. The company is shipping at present lamp equipments for 300 cars a day and soon as it is settled in its new plant, it will be able to ship at least 600 equipments daily.

RECENT ADDITION TO FORD PLANT IN DETROIT—THE NEW FOUNDRY

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Amityville, L. I.—Long Island Automobile, Machine and Plumbing Co., capital stock $15,000; directors, Thomas Blyth, William E. Hulse and William F. Couran, Jr.

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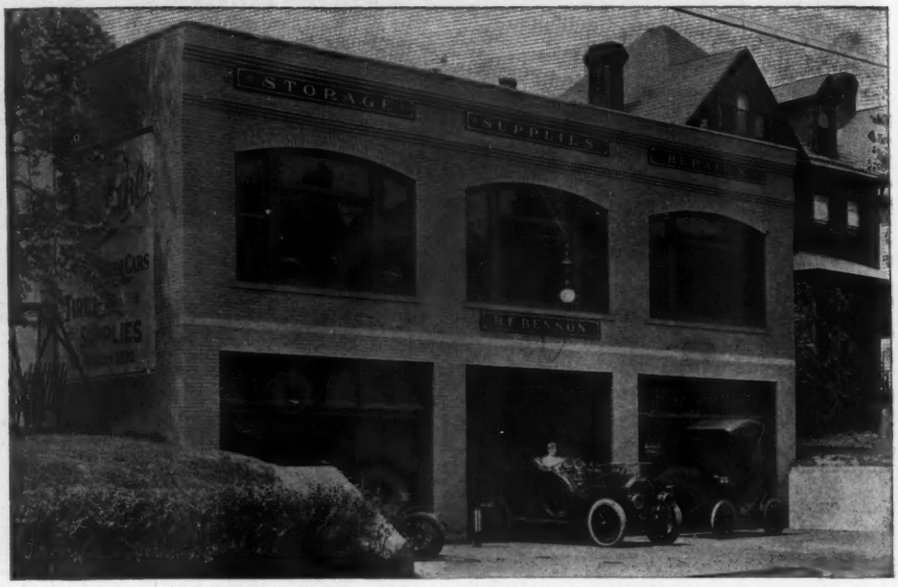

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Philadelphia, Pa.—The Fairmount Auto Tire and Repair Co. has opened a repair shop at 1423 Fairmount avenue, with H. H. Bickley as manager.

Cleveland, O.—The Commercial Motor Wagon Co. has been formed to sell in this territory the Hart-Kraft motor delivery wagon. The agency will be located at 1926 Euclid avenue.

Marysville, O.—Dr. O. H. Thorpe and George A. Rausch have sold their garage and repair business on Plum street to the Marysville Motor Car Co., recently organized by A. Earl Harvey and Walter M. Otte.

Columbus, O.—Extensive alterations and additions to the garage of the Central Ohio Motor Car Co. at 61 East Spring street have been completed. The office has been moved to the second floor, giving more room for show purposes. A repair shop has been installed and a large addition erected in the rear.

St. Paul, Minn.—Machinery is being installed by the Joerns-Thiem Motor Car Co.'s plant at Hampden and Harvey avenes for the manufacture of motor cars. The concern is incorporated for $200,000. Fred Joerns, of the Joerns Brothers Mfg. Co., is the president of it, and E. A. Thein, manufacturer of motor cycles in Columbia Heights, Minneapolis, Minn., is secretary. The plant, including manufacturing equipments, represents an expenditure of about $70,000.

Philadelphia, Pa.—A charter has been issued to the E-M-F Co., with a capital of $50,000.

Phoenix, Ariz.—Will Wescott has acquired a half interest with C. E. Hemperly in the Mesa garage.

Logansport, Ind.—Arthur E. Dunn has purchased the building at 617-23 Broadway recently occupied by Harrison Carriage Works and will use it as a garage, handling the Buick.

Bowling Green, O.—The Gramm Motor Car Co. has started the erection of an addition 50 by 50 feet to take care of increasing business. Both the Bowling Green and Lima plants of the company are busy with trucks and taxicabs.

Muskegon, Mich.—The Michigan Crankshaft Co. has decided upon the erection of a new factory building. Plans for the structure are now being made. The estimated cost is $5,000. The building will be of brick and the floor space will be 64 by 132 feet. Cement and steel also will be used in the construction.

Detroit, Mich.—The contract has been let for the construction of what is designed as the most ambitious and imposing garage in the city, to be occupied by Grant Brothers, local distributors of the Chalmers and the Detroit branch of the Winton Motor Carriage Co. The location is near the corner of Warren avenue, and the building will be 230 feet by 97 feet. An ornamental arched driveway will form the center of the decorative effect of the front, the entire expanse of which will be glass and marble. There will be show rooms and

Announcements

STORE OF MOON MOTOR CAR CO. OF NEW YORK

offices in the front, with garages and repair shops in the rear. There will be driveways at both front and back.

Massillon, O.—The English Motor Co. has been incorporated with a capital of $25,000 to engage in the motor car business.

Philadelphia, Pa.—The Otto Auto Co. has awarded a contract for a 30 by 50-foot addition to its plant at Thirty-second and Walnut streets.

Philadelphia, Pa.—A large garage is to be built for the Autocar Co. on a lot at the southeast corner of Twenty-third and Market Streets. It will cost $125,000.

Brawley, Cal.—George Hedden has commenced the cement foundation for a 50 by 65-foot machine shop and garage at the corner of Sixth and G streets. Dick Ruth will be the proprietor.

Oshkosh, Wis.—The Hoaglin Auto Co. is rushing work on a large new garage building in order that it may occupy the building by June 15. It is of fireproof construction, with brick walls and steel-trussed roof.

Philadelphia, Pa.—The Baker electric will again be represented in the Quaker City, F. C. Reamer, Jr., and Carroll A. Haines having just been appointed agents and have established offices and salesrooms at the Park garage, 2214 Spring Garden street.

Cambridge, Mass.—Work is being rushed on a new building for the Ford. It is of concrete and will give a floor space of 15,000 square feet. The first floor will contain the mechanical and executive parts, the second floor will be a showroom and a place for parts and the third floor will be for storage. H. S. Partridge will have charge of it. The salesrooms will still be retained in Boston.

Cleveland, O.—The Peerless Motor Co. is completing its three-story brick and steel addition which will be used as foundry and body shop.

Lorain, O.—The C. N. Lippart Auto Co. has been incorporated with a capital of $5,000, by W. S. Baldwin, W. A. Pitzele, F. L. Pitzele, C. N. Lippart and E. A. Baldwin.

Baltimore, Md.—The recently organized Auto Trading and Garage Co. has opened its new garage at North avenue and Oak street. The company is the Baltimore agent for the Washington.

DeLand, Fla.—The Field's Garage Co. has been incorporated at this place with a capital stock of $15,000. It almost has completed a 50 by 100 foot brick building and expects to be in active operation within 30 days.

Philadelphia, Pa.—The Stoddard-Dayton Auto Co., of Philadelphia, has opened its new home at 253-55 North Broad street, with William P. Berrien as manager. It will handle the Stoddard-Dayton and Courier cars.

South Bend, Ind.—The Studebaker Repository will be the headquarters for the E-M-F and Flanders cars in this city. The Studebaker Automobile Co. has completed arrangements by which the cars will be sold from the repository.

Newport, R. I.—A new depot will be operated here by the Foss-Hughes Motor Car Co., dealer in Pierce-Arrow cars in Philadelphia, Baltimore, Providence and Wilmington. Accessories will be handled and supplies of all kinds carried. The garage department will have facilities for caring for 275 cars. The depot is on Bellevue avenue, adjoining the Casino.

Hondo, Tex.—The Hondo Motor Sales Co. has been organized by C. R. Gaines and L. E. Brown and will operate a garage.

Ensley, Ala.—The Morrison Motor Car Co. has awarded a contract to A. M. Gholson, Ensley, for the erection of a two-story brick garage.

Racine, Wis.—David Davis, Jr., of Racine, Wis., has been appointed mechanical superintendent of the new gasoline and oil engine department of the J. I. Case Threshing Machine Co. at Racine.

Philadelphia, Pa.—Fred E. Devlin has been appointed manager of the Hills Motor Car Co., representing the Royal Tourist. Mr. Devlin formerly was connected with the Pierce-Arrow representatives in Philadelphia and Baltimore.

Muskegon, Mich.—The Continental Motor Mfg. Co. has just completed the purchase of the big Beaudry block on Western avenue, which comprises three stores. The company expects to employ 200 more men in the near future.

Cleveland, O.—The Auto Motor Castings Co. has been incorporated with a capital of $50,000 to manufacture castings and accessories. The incorporators are Adelbert J. Miller, Charles H. Guckelman, William Shofer, William Baisch and Alexander L. Appleby.

Laurelville, O.—A company will be organized with a capital of $150,000 to manufacture motor cars. Wayne Armstrong has been elected president and negotiations are being carried on for the purchase of a site upon which a factory will be erected. The plant will consist of three large cement buildings.

Agency Appointments

Hartford, Conn.—H. L. Heppe, Warren-Detroit.
La Crosse, Wis.—La Crosse Plow Co., Royal Tourist.
Madison, Wis.—R. D. Rockstead, Warren-Detroit.
Delavan, Wis.—Dinsmore & Calkins, Maxwell and Overland.
Fox Lake, Wis.—W. J. Cochrane & Son, Jackson and Fuller.
Kansas City, Mo.—Broadway Garage and Sales Co., Clark.
Seattle, Wash.—H. F. Norton, Sternburg truck.
Los Angeles, Cal.—C. W. Snyder, Middleby.
Pittsburg, Pa.—Leon C. Long, Babcock electric.
Washington, D. C.—Krit Motor Sales Co., Krit.
Washington, D. C.—Barber & Hill, Demot.
Cleveland, O.—Brandt Motor Car Co., Acorn truck.
Baltimore, Md.—Reis & Co., Warren-Detroit.
Philadelphia, Pa.—Reamer & Haines, Baker electric.
Cleveland, O.—Commercial Motor Wagon Co., Hart & Kraft.
Cleveland, O.—J. H. Anderson, Only.
Detroit, Mich.—W. F. V. Newmann, Pierce-Arrow.
Columbus, O.—Kimmell Brothers, Badger.
Marietta, O.—Will J. Friel, Overland.
Cadiz, O.—E. M. Long & Sons, Overland.
Boston, Mass.—Waite-Robbins Co., Babcock electric and Sterling truck.
Boston, Mass.—C. F. Whitney, Courier.
Rock Island, Ill.—Yeggy-Trevor Motor Co., Knox.
Hondo, Tex.—Hondo Motor Sales Co., Buick & Cole.

Development Briefs

Peerless Shock Absorber

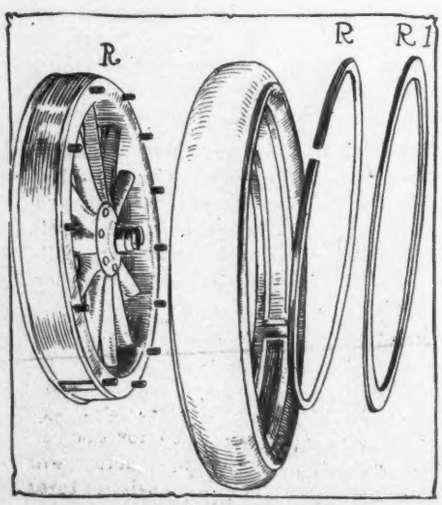
THE J. H. Sager Co., Rochester, N. Y., manufactures the Peerless shock absorber, the shock-absorbing feature of which is a three-point cam C, attached to the two levers L, which connect with the frame. The three-point cam is contained in the center of three manganese bronze plates M, back of each of which is a steel leaf spring S. The plates and springs are contained in a housing H which attaches to the spring, and the shock-absorbing feature consists in the movement of the cam against the three sets of bronze plates and the spring. The bronze plates and springs are maintained in their same relative position by depressions D in the housing and into which the ends of these fit. The housing H is completely filled with grease

Vulcan Motor Tool

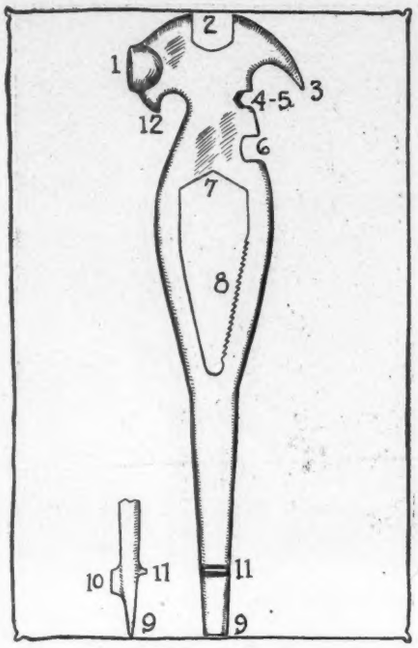
The J. H. Williams Co., of Brooklyn, N Y., markets the Vulcan motor tool, which is a drop forged combination wrench 8 inches in length and weighing ½ pound. The wrench is a combination tool, part 1 constituting a hammer, 2 for tire lugs, 3 cotter-pin puller, 4 gas-tank wrench, 5 wire-insulation scraper, 6 air-tank wrench, 7 spark-plug wrench, 8 alligator wrench, 12 bottle-opener, 9 cotter-pin spreader, and 10 and 11 screw-drivers.

Firestone Truck Tire

The Firestone Tire and Rubber Co., Akron, O., has put on the market recently its demountable rim for truck uses. The solid rubber tire is secured on its channel rim by the standard side wire fastening of this company. To the inner circumference of this wire is rivited a bevel band which has a section cut out to allow it to fit over the plate on the rim of the wheel in order to prevent creeping. A single flanged rim R is sunk on the felloe of the wheel and the demountable rim, carrying the tire, is held in place by the flange on



FIRESTONE TRUCK TIRE

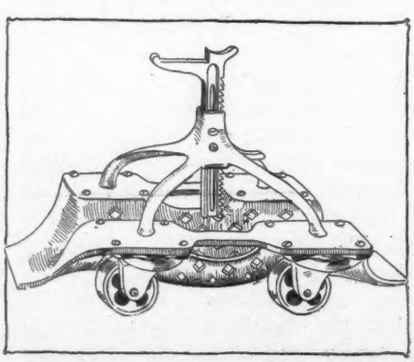


VULCAN MOTOR TOOL

the inner side and on the outer side by two rings, the outer one R1 being held in place by twelve transverse bolts and nuts passing through the wheel felloe. The inner ring R has a coned bearing surface and is wedged between the band on the wheel felloe and the demountable rim R1, which is securely drawn up as above described.

Castors for Jacks

A useful garage accessory is a jack designed to be used in connection with casters on which a motor car can be moved about on the garage floor. The Automobile and Accessories Mfg. Co., Baltimore, Md., has brought out a device of this nature. The jack is built with four spreading feet which rest on the framework of a four-wheel castor, the castor itself being intended to carry one wheel of a motor car. The jack itself, when on the castor, will lower to a height of 12 inches and raise to a height of 19. When the jack is on the floor it stands 11 inches high and will raise to 16. It is operated by a handle 3½ feet long. The castors have



COMBINED CASTOR AND JACK

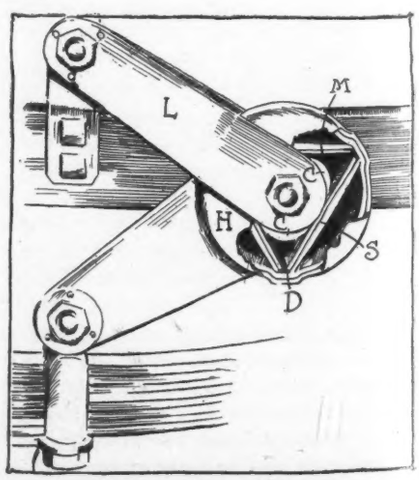
been improved by adding ball bearings. An important feature of the jack is that the head is made to fit under the rear axle above the truss rod, and for round or square axles. This combination of jack and castors will be found useful in the garage where space is so limited, that it is convenient, occasionally to move a car while it is standing on a jack with a wheel off.

Edelmann Tire Gauges

E. Edelmann & Co., Chicago, manufacture two styles of tire gauges, one of which is used to indicate the air pressure in a tire by pressing the gauge against the tire valve. This is a real Bourdon spring design, the spring being very small, but constructed the same as in a steam gauge. The second style of gauge is intended to be used in connection with a pump, so the pressure in the tire is indicated as the tire is being inflated. This concern also manufactures gauges for indicating pressure on oil or gasoline feeds.

Universal Top Reel

A new device that will be seen during the coming season in connection with tops for motor cars is the universal reel, which consists of a phosphor bronze cable which takes the place of a leather strap extending from the forward bow of the top to the side members of the frame near the front of the bonnet. These phosphor bronze cables are wound on a reel, carried in an oxidized metal case. When not in use the cables are wound on a threaded drum in this metal case. This drum is controlled by a gear-actuated spring. In putting the top up a little extra length of cable is unreeled and the hook fastening the ends of the cables to the frame is snapped into position. When this is done releasing a locking pin sets a spring-controlled gear in motion, and the cable is drawn to the required tension. To lower the top a little extra cable has to be unreeled, after which it will all be rewound from the drum. This device is being marketed by the National Sales Corporation, Detroit.



PEERLESS SHOCK ABSORBER

a new license and number must be procured at $2. Dealers' licenses cost $5, which entitle the holder to four duplicate number plates.

Threat by Uncle Sam—The United States postoffice department is going into the road inspection business, and unless county roads in the state of Washington are found in passable condition, rural service along them will be discontinued.

Ohio Club Election—The Jefferson County Automobile Club met at Steubenville, O., last week and elected these officers: President, C. E. Francey, Toronto, O.; vice-president, J. E. McGowan, Steubenville, O.; secretary-treasurer, Justin A. More, Steubenville, O. Directors: J. E. Wheaton and A. G. Lee, of Steubenville. The club has a membership of seventy-five.

Will Accept Decision—The state highway department of Pennsylvania has been advised by the attorney general's department not to appeal to the supreme court from the decision of Judge Staake, of Philadelphia, who recently ruled that a chauffeur was a professional driver—one who drove for wages—thereby removing the necessity of every person, not an owner, who desired to run a car, taking out a state license, is ruled by Assistant Attorney General Hargest and which the Quaker City Motor Club so successfully fought.

Tags for Louisville—The secretary of the sinking fund commission, A. Moss Terry, has just received a consignment of 1,200 tags, which are to be put out on May 1, when the old motor licenses expire. Mr. Terry states that 863 licenses for motor cars are now out in Louisville and he expects a heavy increase before the end of the next fiscal year. The tags are to be furnished those obtaining licenses at $5 each. Badges to the number of 1,000 for licensed chauffeurs are also in the possession of Mr. Terry and will be distributed on May 1.

Badgers Organizing—The Manitowoc County Automobile Club is the name of the organization effected by owners of Manitowoc, Two Rivers and other cities and villages of Manitowoc county, Wis. John E. Plumb of Manitowoc was elected president; J. E. Hamilton of Two Rivers, vice-president; E. J. Carroll, Manitowoc, secretary; T. W. Gray, treasurer. President Matthew C. Moore of the Wisconsin State A. A. attended the organization meeting and it was decided to affiliate with the state body at once. The membership will be about 100 before the charter closes. Two Rivers will furnish thirty and Manitowoc about sixty-five. The objects of the club are: To work for the establishment of a permanent Lake Shore drive between Manitowoc and Two Rivers; to enforce the laws providing for sign boards and guide posts throughout the county and state; to adopt measures that will result in the use of caution and care and strict observance of all laws relating to speed and rules of the road; to discourage speeding by reckless drivers; to seek members and others to use the utmost courtesy to farmers and other users of horsedrawn vehicles.

Four Winds

Parade for Champaign—Thursday, April 28, the Twin City Automobile Club of Champaign and Urbana, Ill., held its first parade. The event was held in the evening and the request of the club management for every motor car owner to turn out resulted in a great display.

Chicago's Big Parade—The floral parade of the Chicago Automobile Trade Association which will be held May 7 promises to be an affair of magnitude. Already more than 100 cars have been entered by the dealers and the Chicago Association of Commerce not only has endorsed the proposition but has sent out 4,000 letters urging its members to participate in the motor turnout.

Post Pathfinder Out—The work of blazing the route for the Washington Post reliability tour, May 27-31, was begun Saturday, when a seven-passenger Amplex left Washington for Richmond. The route to Richmond will be via Leesburg, Winchester, Strasburg, Newmarket, Staunton, Basic City, Charlottesville, Paynes, and Goochland. A part of the route is through the far-famed Shenandoah valley, where the road conditions are little short of ideal. The trip up from Richmond will be through Louisa, Gordonsville, Culpepper, Remington, Warrenton, and Manassas.

Nashville Starts a Club—Nashville at last is to have a club, the arrival of the official pathfinder for the Glidden tour stirring up the enthusiasm that brought it about. The club was organized at a general meeting held for making arrangements for receiving the Glidden tour pathfinder. Leland Hume was elected to temporarily direct the affairs of the organization and committees were named to draw up constitution and by-laws. R. L. Burch, president of the state fair, tendered the use of the Cumberland Park club house until the club can arrange for permanent quarters.

Good Roads Missionaries—The Lehigh Valley Motor Club will inaugurate its present season's good roads work with a smoker and luncheon to all the road supervisors of Lehigh county, Pa., to be followed by a motor trip into the country districts to afford an object lesson in road building. A demonstration of steel and log road drags will be made on the clay roads. A number of these implements have already been furnished to several supervisors by the club, the 3-mile stretch from Catasauqua to Shoenersville having been kept in first-class condition by Supervisor C. O. Cressman with a drag provided by the club. During the coming trip it will be demonstrated that two horses and one man can drag 15 miles of dirt roads in a single day.

Maxwell Made Pathfinder—President W. J. Morgan of the Motor Contest Association, under whose auspices the around New Jersey reliability contest will be held on May 10 and 11, has awarded the path finding work to the Maxwell-Briscoe Motor Co.

Schuster Makes Good—George Schuster, who drove the Thomas car in the race from New York to Paris, and who is now with the Boston branch, was notified last week that he would have to pass an examination as to his ability as a motor car driver by the examiner of the highway commission. So he responded and made good.

After Cobe Cup for Speedway—E. A. Moross, manager of the Indianapolis speedway, visited Ira M. Cobe, president of the Chicago Automobile Club and donor of the Cobe cup, on Monday of this week. Moross desires to convert the Cobe cup into a speedway event and wishes to feature it on July 4. His proposition to Mr. Cobe is now being given consideration.

Pays to Belong to Club—Arthur M. Crumrine, representing the Columbus Automobile Club, called on Director of Safety McCune of Columbus, O., asking that the promiscuous arrest of motorists whose cars are without tail lights be stopped. The club is desirous of coming to some sort of agreement with the police department. Policemen have been instructed to show lenieney when the driver shows a membership card of the Columbus Automobile Club.

Prefer Roads to Racing—At the regular monthly meeting of the Portland Automobile Dealers' Association it was decided that entering cars in races was not profitable, and that instead of races, therefore, the dealers would band all their efforts towards securing better roads in Oregon. Most of the Portland men say they have not profited greatly by the past 2 years' experience in racing. They have concluded that races are not a paying proposition, but that good roads are, not only to themselves but to the entire country.

Raise Fund for Club House—Upward of $11,020 was raised in an hour at a smoker held at the rooms of the Buffalo Automobile Club last Saturday evening. The money will be added to a fund being raised to pay for a club house to be built for the organization in Clarence Hollow, 17½ miles from Buffalo. In connection with the project $75,000 will be issued. Drawings of the new building were explained by President Enos of the club and Robert Cartere, architect. All the members will be given a chance to take bonds. The structure will probably be ready by July 1.

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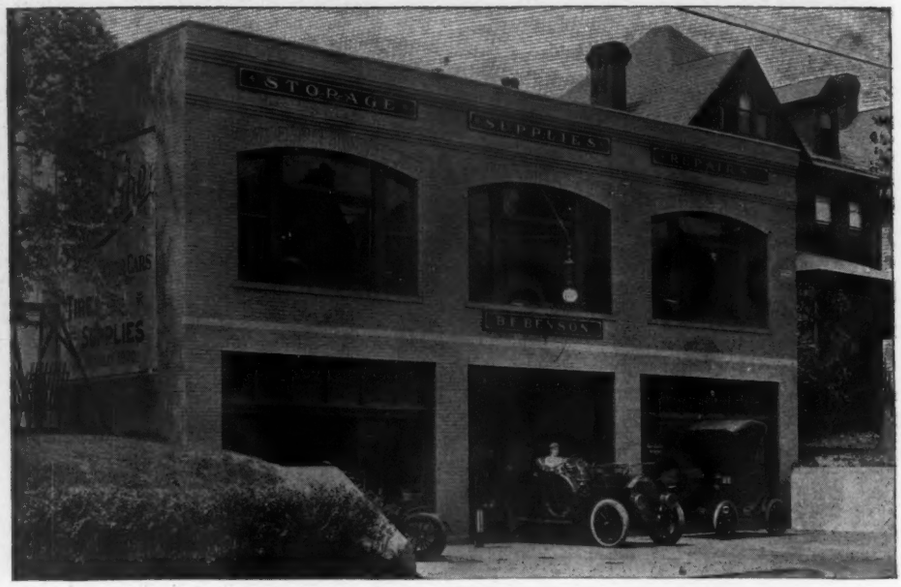

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Pittsburg, Pa.—A charter has been issued to the Forbes Motor Car Co., with a capital of $10,000.

Corning, Ia.—C. C. Harken has bought the Gellett block, on which he will erect a garage and repair shop.

Philadelphia, Pa.—The Fairmount Auto Tire and Repair Co. has opened a repair shop at 1423 Fairmount avenue, with H. H. Bickley as manager.

Cleveland, O.—The Commercial Motor Wagon Co. has been formed to sell in this territory the Hart-Kraft motor delivery wagon. The agency will be located at 1926 Euclid avenue.

Marysville, O.—Dr. O. H. Thorpe and George A. Rausch have sold their garage and repair business on Plum street to the Marysville Motor Car Co., recently organized by A. Earl Harvey and Walter M. Otte.

Columbus, O.—Extensive alterations and additions to the garage of the Central Ohio Motor Car Co. at 61 East Spring street have been completed. The office has been moved to the second floor, giving more room for show purposes. A repair shop has been installed and a large addition erected in the rear.

St. Paul, Minn.—Machinery is being installed by the Joerns-Thiem Motor Car Co.'s plant at Hampden and Harvey avenes for the manufacture of motor cars. The concern is incorporated for $200,000. Fred Joerns, of the Joerns Brothers Mfg. Co., is the president of it, and E. A. Thein, manufacturer of motor cycles in Columbia Heights, Minneapolis, Minn., is secretary. The plant, including manufacturing equipments, represents an expenditure of about $70,000.

Philadelphia, Pa.—A charter has been issued to the E-M-F Co., with a capital of $50,000.

Phoenix, Ariz.—Will Wescott has acquired a half interest with C. E. Hemperly in the Mesa garage.

Logansport, Ind.—Arthur E. Dunn has purchased the building at 617-23 Broadway recently occupied by Harrison Carriage Works and will use it as a garage, handling the Buick.

Bowling Green, O.—The Gramm Motor Car Co. has started the erection of an addition 50 by 50 feet to take care of increasing business. Both the Bowling Green and Lima plants of the company are busy with trucks and taxicabs.

Muskegon, Mich.—The Michigan Crankshaft Co. has decided upon the erection of a new factory building. Plans for the structure are now being made. The estimated cost is $5,000. The building will be of brick and the floor space will be 64 by 132 feet. Cement and steel also will be used in the construction.

Detroit, Mich.—The contract has been let for the construction of what is designed as the most ambitious and imposing garage in the city, to be occupied by Grant Brothers, local distributors of the Chalmers and the Detroit branch of the Winton Motor Carriage Co. The location is near the corner of Warren avenue, and the building will be 230 feet by 97 feet. An ornamental arched driveway will form the center of the decorative effect of the front, the entire expanse of which will be glass and marble. There will be show rooms and

Announcements

STORE OF MOON MOTOR CAR CO. OF NEW YORK

offices in the front, with garages and repair shops in the rear. There will be driveways at both front and back.

Massillon, O.—The English Motor Co. has been incorporated with a capital of $25,000 to engage in the motor car business.

Philadelphia, Pa.—The Otto Auto Co. has awarded a contract for a 30 by 50-foot addition to its plant at Thirty-second and Walnut streets.

Philadelphia, Pa.—A large garage is to be built for the Autocar Co. on a lot at the southeast corner of Twenty-third and Market Streets. It will cost $125,000.

Brawley, Cal.—George Hedden has commenced the cement foundation for a 50 by 65-foot machine shop and garage at the corner of Sixth and G streets. Dick Ruth will be the proprietor.

Oshkosh, Wis.—The Hoaglin Auto Co. is rushing work on a large new garage building in order that it may occupy the building by June 15. It is of fireproof construction, with brick walls and steel-trussed roof.

Philadelphia, Pa.—The Baker electric will again be represented in the Quaker City, F. C. Reamer, Jr., and Carroll A. Haines having just been appointed agents and have established offices and salesrooms at the Park garage, 2214 Spring Garden street.

Cambridge, Mass.—Work is being rushed on a new building for the Ford. It is of concrete and will give a floor space of 15,000 square feet. The first floor will contain the mechanical and executive parts, the second floor will be a showroom and a place for parts and the third floor will be for storage. H. S. Partridge will have charge of it. The salesrooms will still be retained in Boston.

Cleveland, O.—The Peerless Motor Co. is completing its three-story brick and steel addition which will be used as foundry and body shop.

Lorain, O.—The C. N. Lippart Auto Co. has been incorporated with a capital of $5,000, by W. S. Baldwin, W. A. Pitzele, F. L. Pitzele, C. N. Lippart and E. A. Baldwin.

Baltimore, Md.—The recently organized Auto Trading and Garage Co. has opened its new garage at North avenue and Oak street. The company is the Baltimore agent for the Washington.

DeLand, Fla.—The Field's Garage Co. has been incorporated at this place with a capital stock of $15,000. It almost has completed a 50 by 100 foot brick building and expects to be in active operation within 30 days.

Philadelphia, Pa.—The Stoddard-Dayton Auto Co., of Philadelphia, has opened its new home at 253-55 North Broad street, with William P. Berrien as manager. It will handle the Stoddard-Dayton and Courier cars.

South Bend, Ind.—The Studebaker Repository will be the headquarters for the E-M-F and Flanders cars in this city. The Studebaker Automobile Co. has completed arrangements by which the cars will be sold from the repository.

Newport, R. I.—A new depot will be operated here by the Foss-Hughes Motor Car Co., dealer in Pierce-Arrow cars in Philadelphia, Baltimore, Providence and Wilmington. Accessories will be handled and supplies of all kinds carried. The garage department will have facilities for caring for 275 cars. The depot is on Bellevue avenue, adjoining the Casino.

Hondo, Tex.—The Hondo Motor Sales Co. has been organized by C. R. Gaines and L. E. Brown and will operate a garage.

Ensley, Ala.—The Morrison Motor Car Co. has awarded a contract to A. M. Gholson, Ensley, for the erection of a two-story brick garage.

Racine, Wis.—David Davis, Jr., of Racine, Wis., has been appointed mechanical superintendent of the new gasoline and oil engine department of the J. I. Case Threshing Machine Co. at Racine.

Philadelphia, Pa.—Fred E. Devlin has been appointed manager of the Hills Motor Car Co., representing the Royal Tourist. Mr. Devlin formerly was connected with the Pierce-Arrow representatives in Philadelphia and Baltimore.

Muskegon, Mich.—The Continental Motor Mfg. Co. has just completed the purchase of the big Beaudry block on Western avenue, which comprises three stores. The company expects to employ 200 more men in the near future.

Cleveland, O.—The Auto Motor Castings Co. has been incorporated with a capital of $50,000 to manufacture castings and accessories. The incorporators are Adelbert J. Miller, Charles H. Guckelman, William Shofer, William Baisch and Alexander L. Appleby.

Laurelville, O.—A company will be organized with a capital of $150,000 to manufacture motor cars. Wayne Armstrong has been elected president and negotiations are being carried on for the purchase of a site upon which a factory will be erected. The plant will consist of three large cement buildings.

Agency Appointments

Hartford, Conn.—H. L. Heppe, Warren-Detroit.
La Crosse, Wis.—La Crosse Plow Co., Royal Tourist.
Madison, Wis.—R. D. Rockstead, Warren-Detroit.
Delavan, Wis.—Dinsmore & Calkins, Maxwell and Overland.
Fox Lake, Wis.—W. J. Cochrane & Son, Jackson and Fuller.
Kansas City, Mo.—Broadway Garage and Sales Co., Clark.
Seattle, Wash.—H. F. Norton, Sternburg truck.
Los Angeles, Cal.—C. W. Snyder, Middleby.
Pittsburg, Pa.—Leon C. Long, Babcock electric.
Washington, D. C.—Krit Motor Sales Co., Krit.
Washington, D. C.—Barber & Hill, Demot.
Cleveland, O.—Brandt Motor Car Co., Acorn truck.
Baltimore, Md.—Reis & Co., Warren-Detroit.
Philadelphia, Pa.—Reamer & Haines, Baker electric.
Cleveland, O.—Commercial Motor Wagon Co., Hart & Kraft.
Cleveland, O.—J. H. Anderson, Only.
Detroit, Mich.—W. F. V. Newmann, Pierce-Arrow.
Columbus, O.—Kimmell Brothers, Badger.
Marietta, O.—Will J. Friel, Overland.
Cadiz, O.—E. M. Long & Sons, Overland.
Boston, Mass.—Waite-Robbins Co., Babcock electric and Sterling truck.
Boston, Mass.—C. F. Whitney, Courier.
Rock Island, Ill.—Yeggy-Trevor Motor Co., Knox.
Hondo, Tex.—Hondo Motor Sales Co., Buick & Cole.

Development Briefs

Peerless Shock Absorber

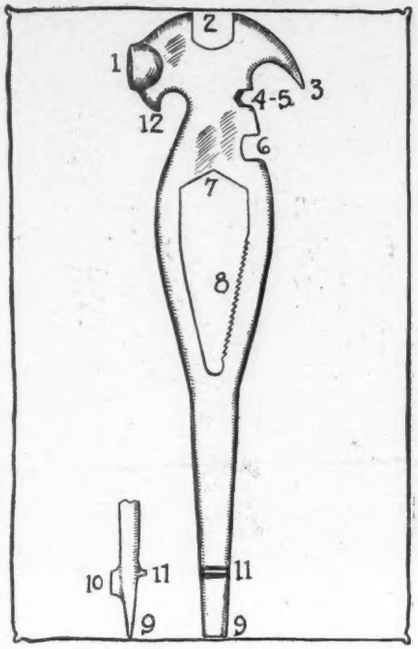
THE J. H. Sager Co., Rochester, N. Y., manufactures the Peerless shock absorber, the shock-absorbing feature of which is a three-point cam C, attached to the two levers L, which connect with the frame. The three-point cam is contained in the center of three manganese bronze plates M, back of each of which is a steel leaf spring S. The plates and springs are contained in a housing H which attaches to the spring, and the shock-absorbing feature consists in the movement of the cam against the three sets of bronze plates and the spring. The bronze plates and springs are maintained in their same relative position by depressions D in the housing and into which the ends of these fit. The housing H is completely filled with grease

Vulcan Motor Tool

The J. H. Williams Co., of Brooklyn, N Y., markets the Vulcan motor tool, which is a drop forged combination wrench 8 inches in length and weighing ½ pound. The wrench is a combination tool, part 1 constituting a hammer, 2 for tire lugs, 3 cotter-pin puller, 4 gas-tank wrench, 5 wire-insulation scraper, 6 air-tank wrench, 7 spark-plug wrench, 8 alligator wrench, 12 bottle-opener, 9 cotter-pin spreader, and 10 and 11 screw-drivers.

Firestone Truck Tire

The Firestone Tire and Rubber Co., Akron, O., has put on the market recently its demountable rim for truck uses. The solid rubber tire is secured on its channel rim by the standard side wire fastening of this company. To the inner circumference of this wire is rivited a bevel band which has a section cut out to allow it to fit over the plate on the rim of the wheel in order to prevent creeping. A single flanged rim R is sunk on the felloe of the wheel and the demountable rim, carrying the tire, is held in place by the flange on



VULCAN MOTOR TOOL

the inner side and on the outer side by two rings, the outer one R1 being held in place by twelve transverse bolts and nuts passing through the wheel felloe. The inner ring R has a coned bearing surface and is wedged between the band on the wheel felloe and the demountable rim R1, which is securely drawn up as above described.

Castors for Jacks

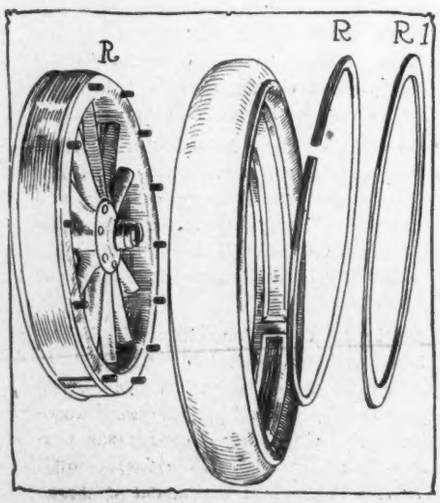
A useful garage accessory is a jack designed to be used in connection with casters on which a motor car can be moved about on the garage floor. The Automobile and Accessories Mfg. Co., Baltimore, Md., has brought out a device of this nature. The jack is built with four spreading feet which rest on the framework of a four-wheel castor, the castor itself being intended to carry one wheel of a motor car. The jack itself, when on the castor, will lower to a height of 12 inches and raise to a height of 19. When the jack is on the floor it stands 11 inches high and will raise to 16. It is operated by a handle 3½ feet long. The castors have been improved by adding ball bearings. An important feature of the jack is that the head is made to fit under the rear axle above the truss rod, and for round or square axles. This combination of jack and castors will be found useful in the garage where space is so limited, that it is convenient, occasionally to move a car while it is standing on a jack with a wheel off.

Edelmann Tire Gauges

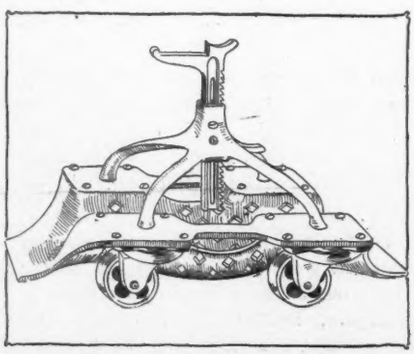
E. Edelmann & Co., Chicago, manufacture two styles of tire gauges, one of which is used to indicate the air pressure in a tire by pressing the gauge against the tire valve. This is a real Bourdon spring design, the spring being very small, but constructed the same as in a steam gauge. The second style of gauge is intended to be used in connection with a pump, so the pressure in the tire is indicated as the tire is being inflated. This concern also manufactures gauges for indicating pressure on oil or gasoline feeds.

Universal Top Reel

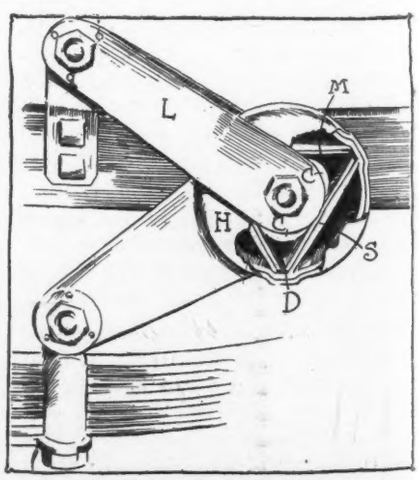
A new device that will be seen during the coming season in connection with tops for motor cars is the universal reel, which consists of a phosphor bronze cable which takes the place of a leather strap extending from the forward bow of the top to the side members of the frame near the front of the bonnet. These phosphor bronze cables are wound on a reel, carried in an oxidized metal case. When not in use the cables are wound on a threaded drum in this metal case. This drum is controlled by a gear-actuated spring. In putting the top up a little extra length of cable is unreeled and the hook fastening the ends of the cables to the frame is snapped into position. When this is done releasing a locking pin sets a spring-controlled gear in motion, and the cable is drawn to the required tension. To lower the top a little extra cable has to be unreeled, after which it will all be rewound from the drum. This device is being marketed by the National Sales Corporation, Detroit.



FIRESTONE TRUCK TIRE



COMBINED CASTOR AND JACK



PEERLESS SHOCK ABSORBER